John Crawford,
M. D.

A

TREATISE

OF THE

Fossil, Vegetable, and *Animal Substances,*

That are made Use of in

PHYSICK.

CONTAINING

The HISTORY and DESCRIPTION of them;

WITH AN

Account of their several Virtues and Preparations.

To which is Prefixed,

An ENQUIRY into the constituent Principles of MIXED Bodies,

AND

The proper METHODS of Discovering the Nature of Medicines.

By the late *STEPH. FR. GEOFFROY,* M.D. Chemical Professor in the Royal Garden, Member of the Royal Academy of Sciences, and Fellow of the Royal Society.

Translated from a MANUSCRIPT COPY *of the Author's Lectures, read at* Paris.

By G. DOUGLAS, *M. D.*

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PREFACE.

BEFORE the Reader enters upon the following Diſcourſe, it may be requiſite to give him ſome Account of the Author, from whence he may the better be able to judge, how well qualified he was for the Work he has undertook, and how juſtly it has deſerv'd to be made publick.

* STEPHEN FRANCIS GEOFFROY, Doctor of Phyſick, was born at *Paris*, on the 13th of *February*, 1672. His Father, *Matthew Francis Geoffroy*, was a conſiderable Apothecary, and his Mother the Daughter of a celebrated Chirurgeon; ſo that he ſeems to have had a kind of hereditary Title to Skill in his Profeſſion.

IN his Education, his Father ſpar'd for no Pains or Expence, that could contribute to his Son's Improvement. Whilſt he was engaged in the Study of Natural Philoſophy, he had regular Conferences held at his Houſe, in which the moſt eminently Learned in every

* *Hiſt. de l'Acad. Royale, &c. An.* 1731. *p.* 93.

Branch of that Science bore their respective Parts. Thither M. *Cassini* brought his Astronomical Instruments, *F. Sebastien* his Machines, and M. *Joblot* his Magnets; M. *du Verney* was Operator in Anatomy, and M. *Homberg* in Chemistry. And these Conferences were carried on with so much Judgment, and such apparent Usefulness, that they became the Model and Foundation of the several Courses of Experiments, which have since been given in the Colleges of *Paris*. Yet in all these the Father had no other Aim than the Instruction of a Son, whom he designed to bring up to his own Business, and leave behind him a Successor in his Shop. But he knew how large a Share of Knowledge was required to arrive at Perfection in Pharmacy, and was unwilling to omit any Circumstance, that might contribute to make him Master of a Profession, which he had followed with so much Advantage himself, both in point of Pleasure and Profit.

To this Study of Physicks in general, M. *Geoffroy* joined private Courses of Botany, Chemistry, and Anatomy; though these Sciences did not wholly engross his Application. His leisure Hours were usually spent in framing of Optick Glasses, in forming little Machines, or in learning *Italian*, of the famous *Abbé Roselli*, so well known by the Romance of the *Unfortunate Neapolitan*.

In 1692. his Father sent him to *Montpellier*, to reside with a noted Apothecary there, whose Son he took to *Paris* in Exchange,

that by this means he might become acquainted with the different Methods of Practice, and be able to learn abroad, what perhaps might have escaped his Notice at home. M. *Geoffroy*, whilst in that University, diligently attended upon the Lectures of the most learned Professors in that famous School, and there laid the Foundations of that high Reputation, which he afterwards gained, and was so justly due to his Merit.

BEFORE he returned to *Paris*, he travel'd into the Southern Parts of the Kingdom, visited the Sea Ports, and whatever else stood recommended as an Object deserving his Attention. But his Curiosity had like to have cost him dear; for in 1693. he was blocked up in the Town of *St. Malo*, at the Time it was bombarded by the *English*, and in all Probability would have perish'd in its Ruins, if the terrible Machine, which play'd upon the Town, had not fail'd of its Effect.

IN 1698. Count *Tallard*, being appointed Embassador Extraordinary into *England*, made choice of M. *Geoffroy*, to attend him in his Embassy, though he had then taken no Degree in Physick; nor was he afraid to entrust the Care of his Health to a Person of his Merit, though at that Time undistinguish'd by any Title. M. *Geoffroy*, who knew the Advantages of travelling, took care to make all possible Improvements, during the Time of his Residence at *London*. He gain'd the Friendship and Acquaintance of most of the learned Men in the Country, and in less than six

Months was admitted a Member of the Royal Society.

FROM thence he passed into *Holland*, where he became acquainted with other Men of Learning, made farther Observations, and acquired still greater Improvements. In 1700 he travel'd into *Italy*, in the Company of *Abbe Louvois*, under the Character of his Physician, as himself phras'd it; but in the Language of the *Abbé*, as his Friend.

NATURAL History, and the *Materia Medica*, were the great Objects, which M. *Geoffroy* had always in his Eye; and he was the more oblig'd to turn his Views that way, as it was his Father's Design to leave him in his Business. In 1693 he underwent an Examination for Pharmacy, and pass'd through all the usual Forms upon that Occasion; but his Inclinations lay still towards being a Physician, though he had hitherto been afraid of declaring them. He directed his Studies however in such a manner, as to answer at the same time both his Father's Intentions, and his own; and thus the *Materia Medica* principally engag'd his Application, which a good Apothecary cannot be too well acquainted with, and a Physician does often not know so well, as the Nature of his Profession requires.

BUT at last, when the Time came that he could no longer dissemble, he let his Father into his Purpose, and gain'd his Consent. He had design'd his second Son for a Physician, whom by an easy Exchange he sent into the Shop, instead of his Brother; and he is now become

come one of the Chemists to the *French* Academy.

M. *Geoffroy* took his Degree of Bachelour of Physick, in 1702. His first Act was put off for some time, because M. *Fagon* the King's first Physician, whose Office it was to preside as Professor in that Exercise, which was usually performed by a Deputy, was resolv'd to attend in Person. The Thesis is generally drawn up by the President; but M. *Geoffroy* made his himself, and maintain'd the Affirmative of this Question, that *the Practical Part of Chemistry was a necessary Qualification to a Physician.* His other Exercises were all of his own Composition, and especially those requir'd for his Doctor's Degree, which he took in 1704. They were all upon Subjects of Consequence; and one of them upon the Question, whether *the human Fœtus was not a Worm in its first Formation*, so raised the Curiosity of the Ladies, that he was oblig'd to translate it into *French*, in order to let them into the Secret of certain Mysteries, which had before not fallen under their View. All his Theses are said to have been look'd upon, in the Schools of *Paris*, as so many finished Discourses upon select Subjects, and were much better received by Foreigners, than such Performances generally are, which for the most part are more remarkable for their Style than their Matter.

He did not hastily throw himself into Practice so soon as he was privileg'd to do it, but shut himself up ten Years in his Study,

that he might be ſure of having laid up a good Fund of Knowledge, before he enter'd on the Uſe of it. Phyſicians have amongſt them what they call Good Principles, and for this very Reaſon becauſe they are good, they are not conformable to the Practice of the Generality of Mankind. M. *Geoffroy*'s Brethren allow, that he was Maſter of them in the moſt perfect Degree. His calm, circumſpect, and it may be ſomewhat timid Diſpoſition, render'd him very attentive to liſten to Nature, not to diſturb her with Medicines, under Pretence of aſſiſting her; nor to aſſiſt her improperly, or otherwiſe than as herſelf required. One particular Circumſtance did him an Injury at his firſt ſetting out. He was too much concerned for his Patients, and the Senſe of their Condition brought upon him an Air of Melancholy, which for a time alarm'd them; till at length, when they had diſcover'd the Cauſe of it, they found themſelves oblig'd to him for the Expreſſion of ſo uncommon a Tenderneſs, and withal ſo agreeable to Perſons in Diſtreſs.

As he was perſuaded that every ſick Man had an equal Share in his Phyſician, he made no Difference in his Attendance between good Patients and bad ones, betwixt People of Faſhion and Perſons of a meaner Station. He was not ſollicitous after the beſt Buſineſs, nor refus'd any that offer'd. From whence it is eaſy to conclude, that the major Part of his Patients were of an inferior Rank; and the more ſo, as his firſt Engagements were ever

ſacred

ſacred to him, and the moſt promiſing Occaſions could not prevail upon him, either to break through them, or ſlightly diſcharge 'em. Beſides this, he was entirely free from all Appearance of Vanity. He was none of thoſe, who take pains to ſpread abroad their own Reputation, and have the Art of whiſpering to Fame, what they would have her repeat aloud with all her hundred Mouths. But the Truth took place at laſt, and M. *Geoffroy*'s Merit came well to be known. In Caſes of Conſequence, the Phyſicians of beſt Note always call'd him into Conſultation, and from him it was that all others were deſirous to learn. *Tully* concludes, that the *Romans* muſt have been the moſt valiant People in the World, becauſe though every Nation claim'd to it ſelf the firſt Rank for Valour, they conſtantly allow'd the ſecond to the *Romans*.

In 1709, the King gave him the Place of Phyſick Profeſſor, in the College Royal, vacant by the Death of M. *de Tournefort*. He undertook to dictate to his Audience the whole Hiſtory of the *Materia Medica*, upon which he had long before made large Collections; nor have we any thing more curious and compleat, than what he has left us upon this Subject. All that he had dictated, was found amongſt his Papers in good Order, after his Deceaſe. And it is from theſe Lectures that the following Diſcourſe is tranſlated, which we now lay before the Publick.

M. *Fagon*, though he retained the Title of Chemiſtry Profeſſor in the Royal Garden, had

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the Place ſupplied by a Deputy. M. *de St. Yon*, upon whom he had confer'd this Employment, becoming uncapable of performing it, through his many Infirmities, in 1707 M. *Geoffroy* was put into his Place, and acquitted himſelf ſo well in it, that in 1712 M. *Fagon* abſolutely reſign'd the Charge up to him. M. *Fagon*, that M. *Geoffroy* might not want Employment, deſired that to his ordinary Lectures of Chemiſtry he would ſuperadd others on the *Materia Medica*, which would extend the uſual Sitting from two to four, and ſometimes five Hours. M. *Geoffroy* readily conſented, through a Zeal for the Service of the Publick, and without Doubt influenced likewiſe by a Sentiment of Glory, which has its Effect, as in Reality it ought, upon Minds that are the moſt remote from Ambition or Vanity. And he had the Pleaſure of ſeeing, that ſuch long Sittings were ſo far from diſcouraging his Audience, that they thereby became more diligent and more attentive. Herein, however, he too little conſulted the Intereſt of his own Health, which, as he was naturally of a weak Conſtitution, was much injured by it.

The Faculty of Phyſick, who are accuſtom'd to chuſe a Preſident once in two Years, whom they call the Dean, found themſelves in ſuch Circumſtances in 1726, as made it neceſſary to make choice of one, who, though worthy of the Employment, might give no Umbrage to their Liberty, and have a greater Regard for the Society, than his own private Advancement. The Election fell upon M. *Geoffroy*.

froy. But as all the Members of a Republick are not alike well-affected to the Good of the State, there were certain of them, who oppoſed his Election under the Pretence of ſome fancied Irregularity in the Proceeding; and he would have willingly been himſelf of their Party; but the Election was confirmed by the Judgment of the Court.

Upon the Expiration of the two Years he was to paſs in this Office, he was continued in it by the very Votes which had formerly oppoſed him. There had aroſe a Diſpute between the Phyſicians and Surgeons, a kind of Civil War, which divided the Members of the ſaid Commonwealth; and this required either Zeal to carry it on, or Temper to put an End to it; or rather, it could not be carried on, as it ought, without an Intermixture both of Temper and Zeal. They did him a ſingular Honour upon this Occaſion. There is uſually under the Dean an Officer, nam'd the Cenſor, who is a kind of Deputy to him. This Title of Cenſor was ſuppreſs'd for the two ſucceeding Years of M. *Geoffroy*'s Preſidentſhip; and he was left at free Liberty to chuſe whomſoever he pleas'd to aſſiſt him. Though theſe Teſtimonies of Eſteem, paid him by the Society, were unſought by his own Ambition, yet had he a lively Senſe of them, from a Principle of Gratitude, which is the ſtronger in ſuch Perſons as are diſengaged from any violent Paſſion. He gave himſelf up, without Reſerve, to the extraordinary Labours of this laſt Employment, which, join'd to

thoſe

thoſe required by his Profeſſion, and the different Places he held, quite ruin'd his Health, and in the Beginning of the Year 1730, he ſunk under the Burden of his Fatigues. He had Courage, however, to put the laſt hand to a Publick Diſpenſatory, which the Deans, his Predeceſſors, had judged neceſſary, but had left unfiniſh'd.

He was made a Member of the Royal Academy of Sciences in 1699, and the printed Tranſactions of that Society ſhew, that he diſcharg'd his Duty in that Capacity with no leſs Faithfulneſs than in all others, except that in the four laſt Years of his Life, his Attendance upon the Buſineſs of the Faculty was a Diſpenſation ſufficiently excuſable. He drew up in 1718 a ſingular Syſtem, with a Table of the Affinities or Relations which different Subſtances in Chemiſtry bear to each other. Theſe Affinities gave Offence to ſome particular People, who were apprehenſive they might be only Attractions diſguiſed, and ſo much the more dangerous, as ſome Perſons of eminent Learning had already cloathed them in ſeducing Forms; but they ſoon grew ſenſible that this was an unneceſſary Scruple, and that M. *Geoffroy*'s Table might well be admitted; which, if rightly underſtood, and carried on to the utmoſt Degree of Exactneſs, might become a fundamental Law for Chemical Operations, and guide the Operator with Succeſs. He died on the 6th of *January*, 1731.

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THE

SCHOOL OF MEDICINE

THE INTRODUCTION.

CHAP. I.

Definition and Division of Medicines.

THE Means used to preserve Health and cure Diseases are of three Kinds; *Diet*, or a proper Regulation of our Way of living; *Surgery*, or the Use of the Hand, either alone, or assisted by Instruments; and *Pharmacy*, which includes the Medicines employ'd for the various Diseases, to which the human Body is subject. As the Knowledge of these three general Branches of the Therapeutick Part of Physick is necessary to all Physicians; so that of Medicines in particular is very difficult to be acquir'd, both on account of their vast Extent, and of the Pains and Labour requisite to discover their Virtues.

By Medicines is meant whatever corrects a depraved or vitiated Condition of the Body; and

reſtores it to a healthful State; ſo that they differ both from Aliment, which preſerves the Body in a ſound State, whereas Medicines reſtore it when impaired; and from Poiſons, which tend to deſtroy the Body. All the Parts of Diet may indeed be termed Alimentary Medicines, inaſmuch as they may ſerve to confirm Health on the firſt Approaches of a Diſeaſe; as Poiſons, which are always detrimental to the Body, have been term'd Deleterious Medicines.

Medicines are either Simple or Compound: Simple Medicines are thoſe which are form'd ſpontaneouſly, or by the Aſſiſtance of Nature alone; and thoſe are called Compound, which are owing to the Art and Induſtry of Men, and to the Mixture of various Simples put together. We propoſe here to treat only of Simple Medicines; the entire Collection of which is termed the *Materia Medica*.

The principal Differences of Simples, whether foreign or domeſtick, are taken either from their Form and Texture, or from their Virtues. In reſpect of their Texture they are divided into Minerals, Vegetables, and Animals; each of which has been termed a Claſs, Kingdom, Family, *&c.*

The Virtue of every Medicine conſiſts, in general, in changing the State of the Solids or Fluids of the Body. The Fluids are either thrown out of the Body or chang'd in it. Evacuating Medicines act by Stool, Vomit, Urine, inſenſible Perſpiration, Sweat, the *Menſes*, *&c.* and from thence are term'd Purgatives, Emeticks, Diureticks, Sudorificks, Diaphoreticks, Emmenagogues, *&c.* Again ſome of them have been ſuppoſed to evacuate only particular Humours; and hence has aroſe the Diſtinction of Purgative Medicines into *Cholagoga*, *Melanogoga*, *Phlegmagoga*, &c. Alterative Medicines perform their Effects by allaying

laying the Heat and Motion of the Fluids, by attenuating them when too groſs or viſcid, by encreaſing their Motion when ſluggiſh and languid; *&c.* and have accordingly been denominated refrigerating, heating, attenuating, *&c.* Their Virtues have been likewiſe apply'd either to particular Diſtempers, or to all the Diſtempers of ſome particular Part, and on theſe Accounts they have been diſtinguiſhed into Febrifuge, Antipleuritick, Antidyſenterick, Traumatick, *&c.* Cephalick, Ophthalmick, Pectoral, Cordial, Stomachick, Heparick, Hyſterick, *&c.*

Medicines which act on the Solids are ſubdivided into Emollients which relax the Fibres, Stypticks which contract, Cathæreticks which corrode, *&c.* Theſe Differences of Simples, in reſpect of their Virtues, might be carry'd to an infinite Length, but as thoſe which are founded on their Form and Texture are much more natural and ſimple, we ſhall here examine them in that Order, and accordingly divide this Treatiſe into three Parts; the firſt concerning Foſſile Medicines, or thoſe found in the Bowels of the Earth, ſuch as Mineral Waters, Earths, Stones, Salts, Sulphurs, Bitumens, metallick Concretions, and perfect Metals. The ſecond concerning Vegetable Productions, as Roots, Barks, Woods, Leaves, Buds, Flowers, Fruits, Seeds, liquid and concreted Juices, and all other Things belonging to Plants. The third concerning Animals, as Inſects, Fiſhes, Birds, Men, and the Parts and Excrements of each Kind, ſo far as they are uſed in Phyſick.

To treat of each of theſe with that Accuracy which the Dignity of the Subject requires, it is not ſufficient barely to relate the Hiſtory and Virtues of each Simple, as handed down to us by Authors; but many other Particulars alſo muſt be attentively conſider'd.

In what the Ancients, for Inſtance, have left us concerning the *Materia Medica*, there is the utmoſt Confuſion and Obſcurity; the ſame Medicines are often called by different Names; ſome are barely mentioned without any Deſcription; and the Virtues aſcribed by them to one Simple have been by later Writers attributed to others. To clear up and determine all theſe Uncertainties at this Time of Day, would be a Task as difficult as it is uſeful. In the next Place, ſo great and ſo numerous Virtues are aſcribed to particular Simples by Authors, that if they could be depended on, each ought to be reckon'd almoſt an univerſal Remedy; but as many of theſe Virtues are merely imaginary, it requires the greateſt Caution to diſtinguiſh the fictitious from ſuch as truely belong to them. Again, tho' the Knowledge of the *Materia Medica* be now carry'd a very great Length, there are nevertheleſs many Things ſtill remaining to be diſcover'd about it, in order to enrich this Science with new ſpecifick Remedies, to determine the Manner in which thoſe Medicines act whoſe Effects are already known, and to fix upon a more ſafe Method of adminiſtring them. In order to this, I propoſe, firſt, to give both the ancient and modern Names of each Medicine; next, to add the Deſcription, Hiſtory, and Choice of them; then, to ſet down their chymical Analyſis, and an Account of the Parts into which they are reſolvible, whereupon their Virtues ſeem chiefly to depend; and afterwards to explain thoſe Virtues, as they have been either diſcover'd by long Experience, deliver'd by Authors of Credit, or found out by myſelf. I ſhall likewiſe ſometimes enquire into the Manner and Reaſon of their Action, that I may not appear ſo far to imitate the Example of Empyricks, as blindly to follow Experience, without any Regard to Reaſon and Philoſophy.

Philoſophy. Laſtly, I ſhall carefully enumerate the ſeveral Cautions to be uſed in giving them, the Preparations they require, and in what Caſes they may be hurtful. But before I begin, ſomething muſt be premiſed concerning the Principles of Bodies, and the Methods of diſcovering the Virtues of Medicines.

CHAP. II.

The Principles of Bodies in general.

IT is impoſſible to diſcover the Virtues of any Body, or how mix'd Bodies of different Kinds ſtand related to the human Body, either for the Preſervation of its Functions entire, the reſtoring them when loſt or impaired, or for the total Deſtruction thereof, 'till we know the Principles of which they conſiſt, and likewiſe the Mixture and Proportion of ſuch Principles in Bodies, to which their Effects are chiefly owing. Wherefore, having diſcovered by various Ways the Parts into which a true Chymical Analyſis reſolves Bodies, we muſt look upon ſuch ſimple Parts, into which all Mixts are reſolvible, and of which they ſeem to be compounded, as their true and genuine Principles. The Ancients having obſerved that in analyſing all Bodies whatever, they obtain'd a Spirit or Mercury, Sulphur, Salt, Water, and Earth, concluded the Number of Principles to be five.

If Wine, for Inſtance, be diſtilled in a proper Alembick, a burning Water or Spirit will firſt ariſe, next an inſipid Water, which they call Phlegm, a thick viſcid Maſs alone remaining in

the Still. This they put into another Veſſel, or Retort, which being expoſed to a more intenſe Heat, a ſmall Portion of Phlegm comes over firſt, then an acid Water, which according to them is ſtill Spirit or *Mercury*, next a fat oily Subſtance called Sulphur. What remains ſtill in the Retort is burnt to Aſhes in an open Fire. Theſe Aſhes are thrown into an Earthen Veſſel, with a proper Quantity of boiling Water, which they impregnate with Salt. This Water being filtred thro' Cap-Paper, and afterwards evaporated, leaves the Salt at the Bottom. The other Part of the Aſhes, which the Water does not take up, is term'd Earth, or *Caput Mortuum*.

Of theſe five Subſtances the Chymiſts have reckon'd two to be paſſive, Water and Earth; and three active, Spirit, Sulphur, and Salt; and on theſe laſt they thought the whole Virtue and Efficacy of the mix'd Body depended. In this Analyſis we may obſerve, that there is a two-fold Spirit; one oily and inflammable, which riſes firſt by a gentle Heat, and is termed Spirit of Wine; another acid and penetrating, like that of Vinegar. Beſides theſe Chymiſts give the Name of Spirit to other penetrating, volatile, or urinous Liquors, obtain'd from the Parts of Animals, ſuch as the Spirit of Urine, Harts-Horn, Blood, and ſuch like Subſtances. But the later Chymiſts have baniſhed theſe Spirits from the Number of their Principles, as being nothing elſe than Sulphur, or Salt, diſſolved in Water. Thus Spirit of Nitre, and others of that Kind, are only acid Salts in Water; Spirit of Harts-Horn, or Urine, Alkaline Salts; and Spirit of Wine, or of Turpentine, an æthereal attenuated Oil.

Some of the Moderns deny likewiſe, that either Sulphur or Salt deſerve the Name of Principles or Elements, as not being the moſt ſimple Subſtances producible

producible by Chymiſtry. For Sulphur, when treated with due Care, may be reſolv'd into Salt, Water, and Earth; as is evident by diſtilling fetid diſtill'd Oils ſeveral Times with quick Lime; which by this Treatment yield, in large Quantities, a volatile Salt diſſolv'd in Phlegm, together with a *Caput Mortuum*, or Earth. Likewiſe æthereal Oils are only fat, thick Oils, like that of Olives, attenuated by Salts and diſſolv'd in Water, as may be prov'd by theſe two Experiments. If Oil of Olives, or any other of that Kind, be mixed with a fermenting Liquor, ſuch as a Solution of Honey in Water, the whole will be converted into an inflammable Spirit. And if a Quart of Spirit of Wine, diluted with ſix Quarts of common Water, be expos'd in a cold Place to the open Air, the volatile Salts will fly off, and leave Drops of Oil ſwimming at the Top, which are in every reſpect the ſame with Oil of Olives, or Almonds.

Salt has no better Title to a Principle than Sulphur, becauſe it may, by proper Management, be at length reduced to Earth and Water. Thus Nitre by Diſtillation may be almoſt wholly reduced to an acid Spirit, but if it be burnt with Tartar or Charcoal Duſt, it becomes an Alkaline Salt, call'd Fix'd Nitre. This, if ſuffer'd to run *per deliquium*, and afterwards filtred through Cap-Paper, will leave a large Quantity of Earth behind; and if the ſame Liquor be diſtill'd to Dryneſs, a large Quantity of inſipid Water will come over, and the Salt remaining at the Bottom of the Retort will have loſt a great Part of its firſt Quantity. If this Operation be repeated, nothing will at length remain but Earth. Again, the Vitrification of Alcaline Salts ſeems to be nothing but the Converſion thereof into Earth, for Glaſs has no Qualities different from thoſe of Earth.

What we have proved by Experiments made by resolving Bodies, may be further confirm'd by others relating to the Formation and Composition of 'em, and particularly by *Van Helmont*'s famous Experiment on the Willow, which has been often quoted by succeeding Authors. He took about two hundred Pounds of Earth dried in an Oven, and put it into a Vessel, cover'd with an Iron Lid full of Holes. In this Earth he set a Branch of Willow, weighing about five Pounds, which soon took Root, and grew so much, that in eight Years Time it weighed an hundred and sixty Pounds, the Earth it stood in having, during all this Time, lost only a few Ounces, so that the whole Increase of the Tree must have been owing to Rain Water and a very small Proportion of Earth, and the Salts and Sulphur therein must have been compos'd of these two Elements alone. The Experiments of this Kind made by the illustrious Mr. *Boyle* on small Sprigs of Mint, Marjoram, Pennyroyal, Balm, *&c.* set in Phials fill'd with clear Water, are more to be depended on. They increas'd in a short Time to double their first Weight, and being afterwards distill'd, they yielded the very same Principles, as they would have done, had they grown in the most proper Soil; from whence it is plain, that Salt and Oil owe their Original to Water and Earth.

Water and Earth do, in the strictest Sense, deserve the Name of Principles, but in the Formation of mix'd Bodies, a third Principle must necessarily concur with them; for as they are of themselves wholly unactive, something must be supposed to give them their Motion and Activity. Without this, Water would immediately turn to Ice, and as there are few Bodies, out of which Fire may not be drawn, it is evident that there must be some active moveable Principle in them all,

all, to which the Motion of the other Parts is owing. Therefore, though this Principle ſhould not fall under our Senſes in the ſame Manner as the others do, that can be no Reaſon for doubting of its Exiſtence, ſince it muſt concur in the Compoſition of all Bodies, which, if they were made of Water and Earth alone, would remain for ever without any Virtue or Energy. This they muſt receive from another Principle, and according to the different Combinations of all the three, Bodies are formed with different Properties and Powers. We acknowledge therefore three ſimple Subſtances in Bodies, which are properly Elements or Principles. One active, which may be term'd Fire, and two paſſive, Water and Earth. From the moſt ſimple Union or Connexion of theſe three Salt ariſes, which conſequently is to be look'd upon as the moſt ſimple of all mix'd Bodies. The next to that is Sulphur, or Oil, made by the Union of the three Principles and of Salt.

Thus far concerning the Principles of Bodies in general; we now go on to conſider each of them in particular.

CHAP. III.

The Principles of Bodies in particular.

ART. I. *Fire.*

WE reckon Elementary Fire the firſt Principle of Bodies, as being that from whence all the reſt receive their Activity. It is a ſimple and moſt ſubtle Body in a continual ſwift Motion, filling

filling and eaſily permeating the Pores of all other Bodies. Its immenſe Subtlety is evident from this, that it penetrates all Bodies whatſoever; and its ſwift Motion, from that Rapidity, which it is capable of communicating to them. Its Force is in proportion to the Quantity of it any where collected. In the Sun, which may be look'd upon as a vaſt Congeries of this Subſtance, its Motion is moſt violent. In Culinary Fires the Quantity and Motion of it are not ſo great, but ſtill greater than in ſpirituous and volatile Liquors, where it is hardly to be perceived, except when they are ſet on fire. Not only all Motion, but alſo Heat, is owing to it, which as it exiſts in Bodies is nothing but the exceſſive Motion of their Parts. It is too ſubtle and active ever to be collected pure in chymical Analyſes; where-ever it is found, it is always united with Water and Earth in Salts and Sulphurs; and is ſometimes concenter'd in Bodies in ſo great Quantities, as conſiderably to increaſe their Weight, as is evident in calcin'd Antimony, in which there is an Addition made of almoſt a fifth Part.

Art. II. *Water.*

Elementary Water is a ſimple, liquid, inſipid, inodorous, pellucid Subſtance. Its Fluidity is owing entirely to the Action of Fire, and when that Action is very great, its Parts are actually divided, and the whole turned to Vapour, but when it is very ſmall, they cohere ſtrongly, and turn to Ice. This Element the Chymiſts call Phlegm, and it may be conceived to conſiſt of ſmall ſmooth Particles of an oblong or oval Figure, and perfectly rigid or inflexible. From the Minuteneſs of its Particles it eaſily penetrates the Pores of almoſt all Bodies. An oval Figure

ſeems

ſeems more agreeable to the Fluidity and Motion of Water than a ſpherical, and likewiſe to the Solidity we obſerve in Ice; the Points of Contact being too few in ſpherical Bodies to form ſo ſtrong a Coheſion. Were its Particles angular and flexible, they would be too weak to penetrate and diſſolve Salts, and would likewiſe be too much reſiſted; but as their Surface is ſmooth, they can eaſily enter the Pores of Salts, and afterwards as eaſily ſeparate their Parts, that is, diſſolve them, by their Rigidity and oval Figure. The want of Taſte or Smell in Water ſeems to be owing to the Smoothneſs, Obtuſeneſs, and Smallneſs of its Particles, which cannot vellicate the Nerves of the Tongue or Noſtrils. The Fluidity of Water ariſes from the Smallneſs, Smoothneſs, and Figure of its Particles, and from the eaſy Motion thereof by the Fire contained in their Interſtices. Without the Action of Fire ſeparating theſe Particles and keeping them in continual Motion, their Fluidity would preſently be loſt, how much ſoever their Structure may diſpoſe them to it, and they would become one ſolid Maſs. On the other Hand, if the Action of Fire upon them be very great, they are further ſeparated from one another, and fly off in Vapour or Smoak. In fine, Water is tranſparent, becauſe its Pores are ſo diſpoſed as readily to tranſmit the Rays of Light.

Art. III. *Earth.*

Elementary Earth is the ſame with the *Terra Damnata* or *Caput Mortuum* of the Chymiſts; being a ſimple, friable, porous Subſtance, without Smell or Taſte, conſiſting of Particles of no regular Figure, and altogether unfit for Motion. The Poroſity of Earth ſeems to ariſe from the irregular Figure of its Particles; and as theſe Particles oftentimes

times touch one another only by their Angles, the whole Mass must necessarily be friable. The Want of Taste and Smell may be owing to their Inaptitude for Motion.

In the Analyses of Bodies the last thing is always this Principle of Earth; and in their Composition it seems to serve as a Basis or Foundation for the other Parts of the Mixture; and to it the Dryness, Solidity, and Hardness of Bodies is in a great Measure to be ascribed.

Art. IV. *Salt.*

SALT, as has been said, is a mix'd Body, but I chuse to say something of it in this Place immediately after the three Principles, because in all the common Analyses of Bodies it is obtain'd entire, and a great deal of Pains and Accuracy is requir'd to decompose it, or reduce it to its Principles. It is also the sole Origin of the Taste, Smell, and many other Properties of Bodies. It may be defined to be a mix'd Body, form'd by the Concretion of Fire, Water, and Earth, into a solid rigid Substance, soluble in Water, and fusible by Fire. As its Particles may be conceived to cohere by large Surfaces only, Salt cannot be friable like Earth, but requires a considerable Force to separate its Parts, which fly off from one another, like those of Glass, with a sensible Noise. It becomes the Cause of Taste and Smell, because its Particles terminate in strong Points, which vellicate the nervous Membranes of the Tongue and Nose.

Salt is of three Kinds, acid, acrid or alcaline, and a third compounded of the other two, called in Latin *Sal salsus*.

Acid Salt is a Congeries of inflexible solid Parts of an oblong Figure, and pointed at both Ends.

Ends. That its Particles are rigid and hard appears from the Force, with which it divides and diſſolves ſolid Bodies; and their Sharpneſs and Pungency are evident from the Effect they have on the Tongue, different from the Corroſion of acrid Salts. Acid Salt is eaſily diſſolv'd by Water, and after this Solution its Particles are equally diſperſed through that Fluid, and have the ſame Motion with it. Hence it appears, that the Particles of both Subſtances have nearly the ſame ſpecifick Gravity; and likewiſe, that the Motion of the aqueous Parts is great enough to overcome the Coheſion of the Parts of Salt.

Concerning the Manner, in which the Particles of acid Salt are compounded of Fire, Water, and Earth, nothing can with Certainty be determin'd. It may be conjectur'd, however, that ſeveral Particles of Water being collected into one little Maſs, are cemented together by ſome Particles of Fire and Earth, lodg'd in the Interſtices left between them; and that all theſe taken together are diſpoſed in an oval Form, or that of two Cones join'd by their Baſes. This Configuration, however, is not the ſame in all acid Salts; but the Differences may all be reduced to three; the nitrous Acid, the muriatick, and the vitriolick; of all which more hereafter.

The Word *Alkali* is derived from *Kali*, the Arabick Name of a Plant, from the Aſhes of which a Salt is obtain'd proper for making Glaſs; and from thence it came to be uſed for all Salts got from the Aſhes of Plants, and afterwards for all Salts and other Subſtances whatever, that ferment with Acids.

Acrid or alkaline Salt ſeems to be a Congeries of ſpherical Particles, with rough prickly Surfaces, becauſe of their great Diſpoſition to Motion, and their corroſive burning Taſte, the Points of their

their Surfaces acting on the nervous *Papillæ* of the Tongue, like ſo many Files, whereas acid Salt is only pungent. But then by theſe Points a larger Surface is expoſed to the Action of Fire than could otherwiſe be, and thus the Particles of Alkaline Salt are very volatile, or eaſily raiſed by a gentle Heat. The Origin of this Salt is probably from a certain Connexion of acid Points and terreſtrial Particles, becauſe in many Operations of Chymiſtry ſuch Salts ariſe from the Mixture of acid Salts and Earth; as we ſee particularly in the Preparation of fix'd Nitre, and Fermentation of Urine. Nitre being diſtill'd leaves a compound fix'd Salt behind, of the ſame Nature with Sea Salt, out of which, by a nicer Diſtillation, an acid Liquor may be extracted, without any volatile Salt, or at leaſt but a very ſmall Quantity; but if the ſame fix'd Salt be previouſly fermented, and then diſtilled, it yields a large Quantity of volatile Salt, and very little fix'd Salt or acid; becauſe by Fermentation or Calcination, the acid and terreſtrial Particles are intimately mix'd, the acid *Spicula* entering the Pores of the Earth, and ſo forming new *Moleculæ*, which are denſe and cloſe towards the Centre, and prickly on the Surface by the acid Points ſticking out. Such are the Particles of volatile Alkali's, of which, if a great Number be join'd together, they muſt cohere very ſtrongly by Means of their Points, and form *Moleculæ* of irregular Figures, in the Pores of which watery, earthy, ſulphureous, or acid Particles may be receiv'd and abſorb'd. Hence it is, that acid Salts are ſeldom pure; and as they are very often fill'd with Particles of Earth, they reſiſt the moſt violent Degree of Fire, and will ſooner melt than be rais'd by it. This is the true Nature of fix'd Alkaline Salt, ſuch as Salt of Tartar, or the Salts got from the Aſhes of Plants, call'd

call'd Lixivial Salts. If they be impregnated with ſulphureous Particles, they continue very volatile, and are raiſed by a ſmall Degree of Fire, as we ſee in Salt of Urine, Harts-horn, and others got from Animals. Acrid Salts eaſily melt when expoſed to a moiſt Air, becauſe the Particles of Water contained therein readily enter their Pores. When thus melted, they become properly *Lixivia*, and are commonly termed Oils, as *Ol. Tartari per deliquium.* Volatile alkaline Salts diluted with Water, are called volatile urinous Spirits; ſuch as the volatile Spirit of Urine, of Harts-horn, Blood, and others.

The *Sal Salſus*, or third Kind, is compounded of acid and alkaline *Moleculæ* united together; and the Figure of its Particles is chiefly owing to the Kind of Acid that enters its Compoſition. The Impreſſion theſe Particles make on the Tongue is more dull and languid than that made by acid or acrid Parts alone, becauſe the *Moleculæ* form'd by the Union of theſe are larger in Bulk, and conſequently leſs diſpoſed for Motion; and therefore, tho' there is a greater Quantity of *Aculei*, or Points, in one of theſe *Moleculæ* than in the former, yet their Bulk makes them leſs capable of entering the Pores of the Skin, and vellicating the nervous *Papillæ*, than when they are in a disjoin'd State. The Taſte of theſe Salts is term'd ſaline, and varies according to the Difference of the acid or alkaline Particles which compoſe them, according to the Thickneſs of the *Spicula*, their Number, and the other Parts that may be mix'd with them. That this is the true Original of this Kind of Salts is evident, both from the artificial Compoſition thereof, from acid and acrid Particles blended together, and from the Reſolution of them into the ſame. Thus by pouring Spirit of Nitre, of Sea Salt, or of Vitriol, on Salt of Tartar, new Salts

are

are produced exactly of the same Appearance with Nitre, Sea Salt, and Vitriol; and by analysing these three Salts, the essential Salts of Plants, *Sal Ammoniacum*, and others, an acid and alkaline Salt may be obtained, in some fix'd, in others volatile.

Art. V. *Oil* or *Sulphur.*

WHAT the Chymists call Oil or Sulphur is not a simple Substance, but a Body compounded of Fire, Water, Earth, and Salt; but we chuse to say something of it here, as it is most commonly separated entire in the Operations of Chymistry, and is with some Difficulty resolvible into its component Principles. It may be defined to be a fluid, viscid, inflammable, transparent Body, without Taste or Smell, (though by mixing it differently with Salts, these sensible Qualities are produced) compounded of Fire, Water, Earth, and Salt; and it may be conceived to consist of many Flakes, or *Flocculi*, each of which is again made up of very small flexible Filaments, form'd of the four Principles beforementioned, by Fermentation, as well in the Bowels of the Earth, as in the Bodies of Vegetables and Animals; thus an aromatick Plant growing in Water, will, by Distillation, yield an Oil, which could never have been obtained from the Water in which it stood; and all Oils may by Art be resolv'd into Water, Earth, and Salt. From these Filaments variously concreted arise the Flakes already mentioned, which are of different Thicknesses, and in the Pores thereof is lodged the Element of Fire, which also runs in Rivulets thro' their Interstices. Upon these depend the specifick Levity, Inflammability, and Fluidity of Oil; but as, notwithstanding the intestine Motion caused

cauſed by the Element of Fire, the *Flocculi* ſtill adhere, in ſome meaſure, together, this Fluid muſt be more viſcid than any other.

From what has been ſaid concerning the Nature of alkaline Salts, and the Figure and Structure of the oily *Flocculi*, it is eaſy to conceive why all Alkali's diſſolve Sulphurs; for ſince the alkaline Particles are ſpherical and prickly, they cannot enter the Interſtices of the *Flocculi* without carrying away ſome of them from the reſt, and thus by Degrees throughly diſſolving them. But the denſe, rigid, and pointed *Moleculæ* of Acids, being forced into theſe Interſtices, increaſe the Denſity and ſtrengthen the Texture of the *Flocculi*; and from the Diverſity of theſe and of the acid *Spicula* mix'd with them ariſe the different Kinds of Sulphurs. Sulphurs form'd in the Earth of Fire, acid Salt, Water, and a very fine Earth are term'd Bitumens. Thus Bitumens diſſolved in a large Quantity of Water form the mineral Oils or Petrolea. But if they are mix'd with Earth and Salt, the ſolid Bitumens are produced, differing from one another in Degrees of Purity, according to the Quantity or Groſſneſs of the Earth, or different Degrees of Mixture. Thus foſſil Coals, Jet, Amber, and the common Bitumens, and bituminous Earths are produced. If there be but a ſmall Quantity of Earth and much acid Salt, the common mineral Sulphur, or Brimſtone, is form'd. If the mineral original Bitumen is join'd to a fuſible Earth, capable of Vitrification, it communicates to it a metallick Form, that is, the Sound, Brightneſs, Softneſs, Ductility, Malleability, and all the other ſenſible Qualities of Metals.

This Origin of mineral Bitumens may be confirmed by many Experiments. If a Mixture of equal Parts of Oil of Vitriol and Oil of Turpentine

tine be digeſted together for a conſiderable Time in a very gentle Heat, and afterwards diſtill'd in a Retort, there will come over firſt a yellowiſh Liquor reſembling *Petroleum*, both in Smell and Conſiſtence. What remains in the Retort is at firſt a ſoft Bitumen, and afterward turns into a hard black Maſs, eaſily inflammable, and, when burnt, ſmelling exactly like foſſil Coal. But if the Diſtillation be continued, a white acid Liquor will next be obtain'd, which, by ſtanding, lets fall a grey Powder, which is true common Brimſtone, a yellow Subſtance of the like Nature adhering likewiſe to the Neck of the Retort; what is left behind being a black, ſhining, light Subſtance, diſpoſed in thin diſgregated Strata, like Talc, in which, by the Help of the Loadſtone, Iron may be diſcover'd. Thus therefore all theſe Bitumens may be artificially produced; and the Analyſis of the natural ones further confirm the Manner of their Formation. Thus the Chymiſts have ſhewn, that Metals are nothing but bituminous Subſtances, which have undergone a long Digeſtion; for by depriving them of their Sulphur they are reduced to Aſhes, and then to Glaſs. This is eaſily ſeen in the imperfect Metals. For if any of them be expoſed to a long Heat, and eſpecially to the Rays of the Sun, collected by a large Burning-Glaſs, the ſulphureous Principle flies off, and only a Calx, or Aſhes, will be left behind, which, in a more vehement Degree of Fire, are preſently vitrify'd; and by reſtoring the Sulphur this Glaſs may again be reduced to Metal.

The inflammable Subſtances in Animals and Vegetables conſiſt of a different Combination of the Principle of Sulphur and acid Salt; for the Oil, or Sulphur, in theſe is form'd by a ſmall Portion of Earth join'd to the elementary Fire, acid Salt and Water; this Oil, when join'd to an acrid Salt, produces

produces Gums; when join'd to a fine Acid, and a new Acceſſion of fiery Particles, it produces eſſential Oils and inflammable Spirits; but if the Acids are more groſs, by Reaſon of a larger Quantity of Earth join'd to them, it forms Reſins, as we learn from the artificial Compoſition of all theſe Subſtances. By mixing Spirit of Wine with volatile Spirit of Urine, we obtain a mucilaginous Concretion, or thin Gum. Oil of Olives and Salt of Tartar, melted together, make a kind of Soap, or thick Gum; and if Spirit of Wine be digeſted for a long Time with Oil of Vitriol, and then diſtill'd, an inflammable Oil is obtain'd, reſembling, in Smell and other Qualities, the eſſential Oils of Plants, a true Reſin being left behind in the Retort.

In Animals this ſame oleaginous Principle forms the Fat, and other glutinous or gelatinous Subſtances; theſe laſt being compos'd of an acrid volatile Salt and Oil, as appears from their Analyſis; but Fat is made of the ſame Oil and acid Salt; for if Oil of Olives and Spirit of Nitre be mix'd together and digeſted, a Subſtance will be form'd in every thing reſembling the Fat of Animals.

Sulphureous Subſtances found in Bodies are either fix'd or volatile. The fix'd Sulphurs are either ſolid, ſuch as Fat, Reſin, and the Bitumens; or fluid, as Oils. Volatile Sulphurs are ſuch as fly off with a ſmall Degree of Fire, and have an Appearance compounded of that of Oil and Water. Such are inflammable Spirits obtain'd from the Flowers and Fruits of Plants.

CHAP. IV.

The Mixture of Elements.

ALL Bodies conſiſt of the five Principles mentioned in the laſt Chapter; and the Diverſity of Bodies ariſes entirely from the different Combination thereof. Theſe Combinations, or the Mixture of the five Principles, are owing to Motion, and that Motion entirely to the Element of Fire. This Motion is ſometimes ſlow and inſenſible, as in the Growth and Maturation of Fruits; more lively and quick, as in the Fermentation of Muſt; or very vehement, as in the Deflagration of Bodies. All theſe Motions go by the general Name of Fermentation, and if they tend to the Deſtruction or Diſſolution of Bodies they are term'd Corruption.

The moſt ſimple or leaſt compounded Mixture of Principles is ſeen in the Formation of Salts, which conſiſt chiefly of Water and Earth; next, of Sulphur, made up of Water, Earth, and Salt; then of the acrid Salts, both fix'd and volatile, with the eſſential Salts of Plants, and ſulphureous Bodies, whether ſolid or liquid. The Manner how theſe Mixtures are brought about, and the Changes ariſing from thence, will beſt be underſtood by Examples.

The Fruit of the Vine, juſt beginning to put on the Form of Grapes, is inſipid, or at leaſt taſtes only like Graſs. As it grows, a certain Acidity is diſcover'd in it, which at firſt produces an auſtere Taſte, then an acerb one, in which State the Juice is term'd *Omphacium*, which, in Diſtillation, yields a great Quantity of Water, ſome acid Liquor, and a ſmall Portion of Oil, a large

large Proportion of Earth being left behind. In this Juice therefore the auſtere and acerb Taſtes are owing to the acid Spicula, juſt breaking out through the earthy Parts, but not wholly diſengaged from them. When the Grapes come to be fully ripe, the auſtere Taſte is changed to a ſweet one, becauſe the Juice, being more thoroughly penetrated by the Element of Fire, is rarify'd, and put in a more violent Motion, by which the Salts throw off their earthy *Involucra* altogether, and by a new Combination of theſe Salts, Water, and Earth, are form'd Sulphurs, or Oils. But if any of the acid Salts remain after the Compoſition of the Sulphurs, they continue ſtill entangled by the Filaments thereof, and their ſharp Points vellicating the nervous Papillæ of the Tongue, create that agreeable Taſte which is perceiv'd in Muſt. This Muſt in Diſtillation affords a great Quantity of Phlegm, next a pretty large Portion of an acid Water, ſome acrid or volatile urinous Salt, and a Quantity of thick Oil, much beyond what was gain'd by the former Diſtillation. Laſtly, from the Maſs that remains in the Retort, an acrid fix'd Salt may be obtain'd by the common Method. However, even in this Juice of ripe Grapes, or Muſt, the Salts and Oils are not carried to the greateſt Degree of Fineneſs, and Part of them remain ſtill involv'd in the earthy *Involucra*. But if a large Quantity of it be ſet to ferment, the igneous Particles begin to act again, and by them this inteſtine Commotion is continued, 'till all the groſs Parts are either attenuated or thrown out from the Liquor, and the Salts and Sulphurs perfectly ſet free from the earthy Parts, and intimately mix'd with one another. The Liquor in this State is Wine, and the groſs Parts that fall to the Bottom of the Veſſel are term'd Lees. The Briskneſs and penetrating Quality of

the Wine ſeems to be owing to the large Proportion of the Element of Fire, which harbours among the Filaments of the ſulphureous *Flocculi*; and if this Liquor be diſtill'd, we obtain, firſt, a great Quantity of inflammable Spirit, then a copious Phlegm, next an acid Liquor with ſome Portion of an oily Spirit, a thick Oil, and laſtly, a ſmall Quantity of *Caput Mortuum*, which will yield a little fix'd Salt. In this Diſtillation a far leſs Quantity of acid Liquor is obtain'd than from Muſt, which, on the other Hand, yields no inflammable Spirit. If the Lees of Wine be well dry'd, and then diſtill'd, they yield a very large Quantity of volatile urinous Salt, the acid Salts combined with the ſulphureous and earthy Particles being, by Fermentation and Heat, converted into alkaline Salts.

In the ſame Manner, if green Peaſe or Beans be diſtill'd, they yield a great deal of acid Liquor and Phlegm, with a ſmall Proportion of Oil. If they are firſt fermented with common Water, an inflammable Spirit is got from them in the ſame Manner as from Wine; and if they are kept for ſome Months in a dry Place, they yield a volatile alkaline Spirit, without any acid Liquor, or at leaſt but very little. From whence it is evident, that acid Salt, by its Union with other Principles, is changed into Sulphur, and by its Union with earthy and ſulphureous Particles becomes an alkaline volatile Salt; as by being driven into earthy Particles alone, by the Force of Fire in Calcination, it is chang'd into a fix'd Alkali.

It may be proper upon this Occaſion to obſerve, that the Salts of all Plants are not entirely alike, but differ from one another, not only as the Quantity of Sulphur, Water, or Earth, which is join'd to the Acid, is greater or leſs, but alſo according to the original Nature of the Acid, which enters

their

their Compoſition. Acid Salts, as we have already ſaid, are of three Kinds, muriatick, nitrous, and vitriolick. Muriatick Salts, ſuch as Sea-Salt and *Sal Gemmæ*, being cryſtalliz'd, put on a cubick Figure, the Particles thereof appearing to be form'd of two quadrilateral Pyramids, join'd together by their Baſes. Nitrous Cryſtals repreſent Priſms with ſix Sides, form'd by the Juxta-poſition of two triangular Pyramids. And Cryſtals of Vitriol ſeem to conſiſt of two hexagonal Pyramids, as far as can be judged by the Particles thereof, when carefully ſeparated from all Metals. Theſe original Salts, combined with others, form Compound Salts of almoſt all Kinds. Thus in the vegetable Kingdom, the different Sorts of Vinegars are nothing but ſome original acid Salt diſſolv'd in Phlegm. The eſſential Salts of Plants, obtain'd without Fire, conſiſt of ſome Acid join'd with Particles of Earth, or of the other Principles. Sal Ammoniac ariſes from the Union of acid and volatile alkaline Salts. Fix'd Alkali's are only the acid Spicula ſtuck into earthy *Moleculæ*, and volatile Alkali's conſiſt of the ſame Acid, join'd to very fine Particles of Earth and Sulphur, ſo as to form prickly Globules. Moreover, the ſame Varieties of acid Salts are to be met with in Vegetables, that are found in Minerals. Thus the eſſential Salts of Pellitory of the Wall, Borage, wild Cucumber, *&c.* are nitrous, and when thrown upon burning Charcoal they fulminate like Nitre. The fix'd Salts of Carduus Benedictus, Glaſs-wort, and Spunge, are like Sea-Salt, their Particles having the ſame cubick Figure, and when thrown upon burning Charcoal they decrepitate. The Cryſtals of Tartar are like thoſe of Vitriol; and that they are form'd by a vitriolick Acid appears from the ſulphureous Smell of Tartar, when artfully calcin'd.

Besides the saline Compounds already mentioned, other Mixtures are form'd in Plants, such as Gums, Resins, Honeys, *&c.* Gums are something between Acid and Oil, being an acid Salt so fix'd in Earth as that the greatest Part of it is changed to an Alkali, the other into Oil, so that the Mixture arising from thence is an oily Salt, resembling the saponaceous Concretes of the Chymists, made of Oil of Olives and a Lixivium of Tartar, or the mucilaginous Bodies form'd of Spirit of Wine and the volatile Spirit of Urine. And thus we see, that all Seeds, which are oily when ripe, are in the Beginning only a Mucilage, or imperfect Oil. Resins consist of Oil and Acid, and accordingly are artificially produced by mixing Spirit of Vitriol with Spirit of Wine, or of Turpentine. They are either solid or liquid, but these differ from one another only in the Proportion of Earth, that enters their Composition. Melleous Juices, which either exude spontaneously from Plants, such as Manna, or are obtain'd by Art, as Sugar, are essential Salts, consisting of a Mixture of Acid and Alkali, with a large Proportion of Oil.

The Mineral Kingdom furnishes us with a great Variety of Instances of the Way how the Principles of Bodies may be combined together. The Lime-stone and Parget are so framed, that by being calcined, a vast Number of Cells are open'd by the Fire, into which Water easily enters, with a Hissing or Collision of the included igneous Particles. If the Water remain long in these little Receptacles, nitrous Parts are form'd, as we see in old Walls built with these Materials, from which Nitre may always be obtained. The greatest Part of this Nitre, by Distillation, is changed into an acid Spirit, but by Calcination turns to an alkaline Salt. And it may be, that the Nitre

of

of the Ancients, or that alkaline mineral Salt, which was dug out of the Earth in *Ægypt* and other Countries, and is obtainable by Art from mineral Waters, was nothing but Nitre calcin'd by the Heat of the Earth, and ſo converted into a fix'd alkaline Salt. The vitriolick Acid join'd with different metallick Subſtances produces all the Kinds of Vitriol; with an aſtringent Earth it forms Alums; and with the Principle of Fire, common Brimſtone, which, by Deflagration, may be again converted into Oil of Vitriol, the other Principle flying off. Brimſtone may likewiſe be artificially produced by uniting the Principle of Fire to any vitriolick Acid.

The like Mixture of the Principles of Bodies may be obſerved in the Animal Kingdom. Chyle and Milk contain a latent Acid; which eaſily diſcovers itſelf by Putrefaction; but this acid Salt having undergone a due Fermentation, or ſome other Action analogous to that in the animal Body, is changed into a volatile Alkali, obtainable in great Plenty from Blood, Serum, Bile, Urine, *&c.* In a healthful Body, however, theſe volatile Alkali's are never perfectly form'd, the animal Salts being more of the Nature of Sal Ammoniac, with a Mixture of earthy and oily Parts, to which Mixture the glutinous Quality of the Blood and Serum is owing. By Putrefaction or Calcination all Animal Liquors are changed, ſo as to afford perfect volatile Alkali's, as has been evidently ſhewn by Experiment.

CHAP.

CHAP. V.

The Manner of Diſcovering the Virtues of Medicines.

NOTHING is more to be wiſh'd for than that Phyſicians could diſcover the Changes which all natural mix'd Subſtances are capable of producing in the human Body. This, with a ſufficient Share of Diſcernment how to apply theſe known Remedies properly, would carry the Practice of Phyſick to as great a Heighth as can be deſired. But as Obſervations of this Nature of the Effects of Bodies on one another are ſtill very lame and imperfect, different Methods have been thought of, in ſome meaſure, to ſupply the Want thereof. Some have thought it worth while to frame from the Figure, Colour, or other external Qualities of natural Subſtances, certain Connexions between their Virtues and ſome particular Parts or Diſeaſes of the human Body; and on theſe Principles have form'd Syſtems of the Medicines proper for the Diſtempers incident to each Part. Thus they have pretended, that there is a certain Analogy between Nutmeg and the Head, between the Leaves of Aſarabacca and the Kidnies, between the Fruit of Anacardium and the Heart, between Leadwort and the Teeth, between the Seeds of the Aſh Tree and the Tongue, between the Eagle-Stone and a Fœtus in the Womb, between the *Lapis Variolarum* and Puſtules of the Small-Pox, between the Blood Stone and Blood; between Crabs Eyes, the *Lapis Judaicus*, the Lady's Thiſtle, Teeth of the Boar, Jaws of the Pike or Jack and pleuritick Pains; between the Roots of Figwort, or Knots of the *Carduus Hæmorrhoidalis*, and the

the Hæmorrhoids; between Rhubarb, or Celandine, and the Bile; and ſo of others; but beſides that this Way of diſcovering the Virtues of natural Subſtances has been carry'd no great Length, it is in itſelf altogether abſurd, the exterior Appearances of Things ſerving only to diſtinguiſh them from one another, but not to teach us the Effect they will have on any Part of the human Body.

Galen and his Followers endeavour'd to deduce the Virtues of Medicines from their internal Qualities, and their Fault lay altogether in this, that inſtead of the real Properties of Bodies they ſubſtituted imaginary ones; among which are to be reckoned, in many Caſes, even their four primary Qualities of hot, cold, moiſt, and dry, on which all the reſt depended. They had no other Way of diſcovering theſe in Bodies but by the Taſte and Smell, which are far from being ſufficient to inform us of all their Qualities, though they be, in ſome Inſtances, of very great Uſe. Thus we juſtly conclude, that all bitter Plants are good for Digeſtion; that all Acids are proper to reſtrain the violent Motion of the Blood; and that all Plants of an aromatick Smell are agreeable to the Nerves and animal Spirits. The Taſte and Smell of natural Bodies therefore are not to be neglected in ſearching for their Virtues, but only are to be kept within their due Bounds.

The modern Philoſophers, in order to find out the Virtues of Bodies, have taken two different Methods; the one is to trace them back to their component Principles, and the other to obſerve their Effects: And both theſe Ways are ſtill purſued by the Societies of learned Men in *France*, *England*, *Germany*, &c. By chymical Analyſes the Principles of ſome mix'd Bodies have been ſo far diſcovered, as that by uniting theſe Principles again,

again, or other Substances like them, they have produced Compounds, exactly corresponding with those from whence the Principles were obtain'd. Thus nothing is more easy than to decompose, and again to form Sea Salt, Nitre, Vitriol, Allum, Brimstone, Bitumens, and many other mineral Substances; and by the Improvements that daily continue to be made in Chymistry, it is to be hoped that the Methods taken by Nature, in the Formation of mix'd Bodies, will at length be brought to Light. The Royal Academy of Sciences have been at an immense Pains in analysing Plants likewise, by distilling them, either fresh or after they have been fermented, but have been able to discover but very little Difference in their Principles. A large Quantity of Phlegm generally came over first, then an acid Spirit, an alkaline or urinous Salt, and lastly, a black fœtid Oil. From the Ashes of what remains, is obtain'd a lixivial Salt, such as Salt of Tartar, which runs *per deliquium* in the open moist Air; or a Kind of *Sal Salsus*, as I have already defined it, such as that of the common Wall-flower. Besides these Substances, which are got by Distillation from almost all Plants, there are others obtainable only from some of them. Thus from aromatick Plants, such as Lavender, Thyme, Sage, *&c.* a subtle, fragrant, essential Oil generally rises first. From a few Plants, such as Ellebore, Elleborastrum, Speedwell, Cresses, and others, a very sharp penetrating Spirit or Oil comes over with the first Degree of Fire, which is likewise obtain'd after the Plants have been fermented, but in a different Order. Sometimes the first Degree of Fire brings over an acid or urinous Spirit, sometimes an inflammable and very volatile Spirit.

Theſe are the few Elements, or Principles, obtainable from Plants. We are not, however, to imagine that thoſe which go by the ſame Name are exactly alike in all Plants. The fix'd Salts, for Inſtance, got from their Aſhes, being originally derived from ſome Acid, muſt differ from one another in various Plants, as much as Acids themſelves do. For the ſame Reaſon the acid Spirits, volatile urinous Salts, and even eſſential Oil muſt be different; and accordingly we obſerve, that the eſſential Oil of Thyme, digeſted with Spirit of Sal Ammoniac, gives a violet or purple Tincture, which many other eſſential Oils will not do. Wherein all theſe Differences preciſely conſiſt has not hitherto been ſufficiently clear'd up.

From animal Subſtances we obtain a large Quantity of volatile urinous Salt, a thick Oil, very little fix'd Salt, and ſtill leſs acid Salt. The ſame Subſtances being boil'd in Water yield a Mucilage, or Jelly, from which, by Diſtillation, the Principles already mentioned may eaſily be got.

Though a perfect Knowledge of mix'd Bodies has not hitherto been gain'd by all the Labours which the Learned have undergone in Purſuit of this firſt Method, yet from the Analyſis and Compoſition of Principles, in Plants eſpecially, ſome certain Rules may be laid down for inveſtigating their Virtues; but the peculiar or ſpecifick Virtues of ſome mix'd Bodies have not hitherto been traced, becauſe theſe, perhaps, depend either on ſome fine Particles which enter their Compoſition, and are too volatile to become the Objects of Senſe and Experiment, or on the particular Diſpoſition of the Parts of theſe Bodies hitherto undiſcoverable. Upon one of theſe two Accounts it is, that we do not know whence the

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emetic Quality in Antimony proceeds, why the Jeſuits Bark cures Agues, why Opium is Narcotic, why Cantharides affect the Bladder, why Arſenic is poiſonous; but it is not impoſſible that when a ſufficient Number of Obſervations and Experiments have been made, all theſe Things may be brought to Light.

This brings us to the ſecond Method uſed by modern Philoſophers, to diſcover the Qualities and Virtues of moſt Bodies, that of obſerving their Effects. To compleat this, a great Length of Time will be required, but I can with Pleaſure affirm, that daily Advances are made in it. This Method of Obſervation conſiſts in mixing the Principles of Bodies obtain'd by chymical Analyſis with other Subſtances already known, that by their Action on theſe, the Nature of them may be diſcover'd; and likewiſe in mixing theſe Principles, or the Bodies of themſelves, from which they were got, with the Blood and other animal Liquors, or injecting them into the Veſſels of living Animals, which Practice has afforded ſome very uſeful Diſcoveries.

The Subſtances, with which the Principles of mix'd Bodies have been mix'd in theſe Experiments, are chiefly the Tincture of Heliotropium, the Tincture or Syrup of Violets, the Tincture of red Roſes, the Tincture of Mallow Flowers, the Solution of corroſive Sublimate, of Salt of Lead, and Salt of Tartar, Lime Water, an Infuſion of Galls, the acid Spirits of Sea-Salt, Nitre, and Vitriol, Spirit of Wine, and others. Subſtances that abound with acid Salts turn the blue Tincture of Heliotropium red, and this Red is of different Degrees of Deepneſs, from Purple to the Colour of Bull's Blood, or of Fire, according to the Degrees of Acidity in the Subject. Theſe Subſtances give likewiſe a red Colour to the Tincture of Violets,

Violets, red Roſes, and Mallow Flowers. Bodies which contain an acrid or alkaline Salt turn the Tincture of Violets, Roſes, and Mallow Flowers green. If the Alkali be very weak, by mixing it with Spirit of Sea Salt, a few Bubbles will riſe; if ſtronger, the Agitation and Hiſſing will proportionably increaſe; and by a very ſtrong Alkali a great Effervescence is immediately produced. A very weak, volatile, urinous Salt will, after ſome Time, change a Solution of corroſive Sublimate to the Colour of Opal; a ſtronger Salt of this Kind brings the ſame Solution to a pale Colour; and a very ſtrong one to that of Milk, and gradually precipitates it: And the Quantity of volatile Salt being increaſed, this Precipitation will be made ſuddenly; and when it is very great, the Solution will be coagulated. A fix'd alkaline Salt turns the Solution of Sublimate to a yellowiſh Colour, and, if weak, precipitates it gradually, but, if ſtronger, the Precipitation happens immediately, and the Solution acquires an Orange Colour. If there be any Vitriol contained in a mix'd Body, it will turn the Infuſion of Galls purple or black. The leaſt Portion of Sea-Salt contained in any Body will make a Solution of Sugar of Lead foul; and whatever contains Sal Ammoniac yields an urinous Smell, with the Solution of Salt of Tartar or with Lime Water. Reſinous Bodies give Tinctures to Spirit of Wine, and by mixing theſe with Water the Reſins will fall to the Bottom of the Veſſel.

Experiments have likewiſe been made on the Blood, Serum, Bile, and other animal Fluids, by which it has been found, that ſome Liquors coagulate the Blood in the Veins, and attenuate that in the Arteries, *& è contra* other Liquors attenuate or coagulate the Blood in both equally; from whence it appears, that there muſt be ſome Difference

rence between the arterial Blood and that in the Veins. The Juices of many Plants do not coagulate the Blood in the Arteries; among theſe are the Napellus, Deadly Nightſhade, and other poiſonous Plants; Black Ellebore of the purgative Claſs; Wormwood, Angelica, Maſterwort, Arſmart, and others, that may properly be termed ſalutary. The Juices of almoſt all Plants change the Colour of the Blood, and a few, as Sage, Mint, Bugle, and Viper-graſs turn it livid. Acid mineral Spirits turn the Blood to a thick black Coagulum, except Spirit of Sulphur, which ſeems to make very little Alteration either in the Colour or Conſiſtence; and *Borelli* affirms, that he injected a Drachm of this Spirit into the Jugular Vein of a Dog, without any bad Conſequence; but if *Aqua Fortis*, or any other mineral acid Spirit, be injected in the ſame Manner, tho' diluted with Water, the Creature preſently falls into Convulſions, and ſoon expires in great Torture, and on opening the Thorax, the Heart and Veſſels are found to be fill'd with grumous Blood. A Solution of Salt of Tartar injected produces the ſame Convulſions, Tortures, and Death. But here the Blood in the Heart and Veſſels is not obſerved to be altered in its Conſiſtence. By mixing the ſame Solution, or that of any other fix'd Alkali with Blood, as it runs from a Vein, it ſeems to become more fluid, but at the Bottom of the Veſſel thick turbid Fæces appear, which are likewiſe obſerv'd, though in ſmaller Quantity, when Blood is mix'd with volatile urinous Spirits. Spirit of Wine preſently coagulates the Blood very much, and being mix'd with Serum, turns it to the Conſiſtence of the White of a boil'd Egg. All acid Spirits likewiſe coagulate Serum, but alkaline Spirits do not change it. The yellow Colour of the Bile is by Acids changed to green, by Alkali's to a fainter yellow,

yellow, and by Bitters to a deeper yellow. Acid Liquors cauſe an Efferveſcence with Bile, but alcaline Liquors do not: Spirit of Wine, and all Acids, thicken it. All acid Spirits change the Colour of Urine: Spirit of Nitre, and the Phlegm of Vitriol, turn it to the Colour of Blood; but Spirit and Oil of Vitriol do not change it ſo much. Acid Spirits do not make clear Urine turbid, or cauſe any Precipitation; but when Urine begins of itſelf to be turbid, they haſten this Change; and for the moſt part likewiſe the Separation and Precipitation of its Contents. The ſame Liquors thicken, for the moſt part, the Sediment of Urine, and change it to a red Colour: Sometimes, however, the Sediment being formed either ſpontaneouſly, or by the Help of Acids, ſhall, by the Addition thereof, be again diſſolved; and afterwards a great Quantity of ſandy or gritty Matter, of a reddiſh Colour, ſubſide to the Bottom of the Veſſel. Alcaline Salts turn Urine to a paler Colour, and thin its Sediment, eſpecially volatile Alcali's; by which turbid Urine with a large Sediment, is ſometimes rendered perfectly clear, all the Contents diſappearing. Acids coagulate Milk, and ſeparate it into Curd and Whey: Alcaline Salts hinder this Coagulation; but if one Part of Milk be digeſted, in a ſlow Heat, with two Parts of a Solution of Salt of Tartar, the Mixture will become acid and tranſparent, and a few thick Clots will fall to the Bottom of the Veſſel.

Some farther Obſervations have been made concerning the Effects of Mixed Bodies thrown into the Bodies of Men, and other Animals; by which ſome Subſtances have been found hurtful to the one, and harmleſs to the other. The ſame Quantity of coroſive Sublimate, which will only make a Dog vomit, will kill a Man. The *Nux Vomica*, which may, (as is believed) be ſafely taken by Men, is a Poiſon to Dogs. And the ſame may be ſaid of *Cro-*

ens Metallorum. Jalap, which to Men is a very mild Purgative, throws Dogs into Convulsions, and inflames their Stomach. Many Substances are fatal both to Men and Brutes: Of this Sort are the Roots of the *Corona Imperialis*, the Roots and Leaves of Henbane; which, being eaten, raise an intense burning Heat all over the Body, and disturb the Brain: The Fruit of the deadly Nightshade, which brings on a Delirium and Stupor, and sometimes a Sleep that ends in Death. The *Napellus* produces an intolerable Heat in the Throat and Breast, and as great a Cold in the Extremities, till Death relieves the Animal.

Many more Observations of this Kind might be added; but what has been already said, concerning the two Methods followed by modern Philosophers, in investigating the Virtues and Qualities of natural Mixed Bodies, is sufficient to demonstrate the Importance and Advantages of both, and to direct us in continuing the same Enquiries concerning the Effects of all Substances on the Human Body, and the Manner in which they are brought about; as will appear by the few following Examples.

Let us suppose that the Virtues of the common Burdock are to be found out. The first Enquiry is, what the Leaves will afford by Chymical Analysis. From five Pounds of these Leaves, are obtained a Pound and Half of insipid Phlegm, two Pounds of acid Liquor, eight Ounces of an alcaline Urinous Liquor, a Drachm of concreted alcaline Salt, three Ounces of thick Oil, reckoning both what comes over, and what is burnt away by calcining what remains at the Bottom of the Retort; an Ounce of fixed Salt, and the same Quantity of pure Earth. From this Analysis, it is probable that Burdock Leaves, before they are analysed, contain more of a watry Liquor, than of any other Parts; that this Liquor is plentifully stored with a Salt of the Ammoniacal

moniacal Kind, compoſed of the acid and volatile Urinous Parts joined together; that the fixed Salt did not exiſt in the Plant; but that the eſſential Salt is, by the Force of Fire, converted into it, in the ſame Manner as the Tartar of Wine, which is nothing but the earthy Part of that Fluid, overſtocked with acid Salt, is, by Calcination, turned to a fixed Alcali. Again; the Leaves of this Plant are of a bitter Taſte, and their Juice does not change the Tincture of Heliotropium; which ſhews that the acid Salt in them is ſo intimately combined with the alcaline, thick, ſulphureous and Earthy Parts, as to have no ſeparate Action in that State. Theſe Leaves, when burnt, flaſh a little; from whence it may be concluded, that the Salt they contain is of the nitrous Kind. Therefore the chief Virtues of Burdock Leaves are owing to the great quantity of ammoniacal Salt contained therein, mixed with a ſmaller Proportion of nitrous Salt and Oil; and the Effects, which they are obſerved to produce, are exactly anſwerable to this Conjecture about the Compoſition of them; for they are diuretick, ſudorifick, pectoral, anti-hyſterick, and proper in Fevers.

In like manner, the Leaves of Agrimony, in the Quantity of five Pounds, being chymically treated, yield four Pounds of an acid and almoſt auſtere Liquor, two Ounces of an urinous alcaline Liquor, two Ounces of thick Oil, ſix Drachms of fixed Salt, and an Ounce of inſipid Earth. From this Analyſis it appears, that this Plant contains very little Salt of the ammoniacal Kind, ſince no concrete urinous Salt is got from it; but the acid Salt, wherewith it abounds, joined with Earth, forms a Concrete, reſembling Tartar, or Salt of Coral, combined with a large Proportion of Sulphur. Moreover, Agrimony has a ſaline Taſte, a little aſtringent and acid, and its Juice turns the Tincture of Heliotropium to a faint red; ſo that its aſtringent and aperitive Virtues

ſeem both owing to the ſame auſtere Salt; for, though theſe Effects are contrary to one another, yet they often flow from one and the ſame Principle, the ſtrengthening of the weak and lax Fibres of the ſolid Parts. Experience ſhews, that Agrimony has the Virtues which are ſuppoſed to ariſe from its Compoſition; for it is aſtringent, detergent, reſolvent, vulnerary, and aperient.

The Roots of Biſtort and Silverweed are aſtringent, and ſtop the Flux of Blood, and, accordingly, are found to contain an aluminous Salt, joined with Sulphur; for, by Analyſis, they yield an acid Phlegm, ſome Oil, and a little urinous Liquor, a ponderous *Caput Mortuum* remaining; and, as they are likewiſe of a ſtyptick Taſte, it is probable that the acid Salt and aſtringent Earth, wherewith they abound, are united in a Concrete of an aluminous Kind, upon which their Effects depend.

After the ſame manner, from the Analyſis of the common Mallow, its Manner of acting may be diſcovered. From five Pounds of the Leaves and Roots, are obtained four Pounds of Phlegm, two Ounces of urinous Liquor, about Forty-eight Grains of concrete urinous Salt; four Ounces of Oil, partly fluid, and partly thick; ſix Drachms of fixed Salt, and an Ounce of Earth. Whence it appears that this Plant contains an ammoniacal Salt, joined with Earth; and that the large quantity of Oil is, by its Union with the acid Phlegm, converted into a Mucilage; which, tho' it be deſtroyed by the Fire, is, in the Plant itſelf, the Cauſe of its emollient and lenient Effects. Oil, long beat up with Water and fine Earth, turns to a Mucilage; eſpecially if a ſmall quantity of any acid Spirit be thrown into the Mixture. The Juice of this Plant, taken either inwardly or by Clyſter, is laxative; both as it moiſtens and ſoftens the hard Excrements, and as it relaxes the Fibres

Fibres of the Inteſtines, dried by Heat, and ſo become too tenſe and rigid for their natural Actions.

From five Pounds of the Leaves of common Toadflax, we get three Pounds of acid Phlegm, an Ounce of urinous Liquor, nine Ounces of Oil, three Drachms of fixed Salt, and an Ounce and half of Earth. This Plant therefore contains but a very ſmall quantity of ammoniacal Salt, becauſe no concrete urinous Salt followed the ſecond Liquor. Its natural Salt comes neareſt to Tartar, or to the *Terra Tartari foliata*. The whole Plant is of a ſaline herbaceous Taſte, neither does its Juice at all change the Colour of the Tincture of Heliotropium. The Leaves being bruiſed between the Fingers have a diſagreeable Smell, ſomething like that of Elder. Theſe Obſervations, compared with the Analyſis of the Plant, ſhew that it abounds with a fine Oil, reſembling the ſulphurous Part of Opium; whence it muſt be anodyne and reſolvent, as Experience ſhews it to be.

Five Pounds of Earth-Worms yield a Pound and half of urinous Phlegm, and the ſame quantity of urinous Liquor, much more penetrating than the former, five Drachms of concrete urinous Salt, ſeven Ounces of Oil, a Pound of Earth, and two Drachms of fixed Salt. Hence it is plain that theſe Animals abound with urinous Salt, involved by Sulphur in a large quantity, and mixed with a very ſmall Proportion of Acid, much after the ſame manner as Soot. They contain likewiſe much Water and Earth. If they are kept long enough to putrefy, and be afterwards dried, by being waſhed with Water, this Maſs will yield a Salt that flaſhes with Charcoal; which ſhews that the ammoniacal Salt in them reſembles that Kind of Sal Ammoniac, which is made with the Acid of Nitre, and an urinous Spirit. It is therefore eaſy to conceive, that, when externally applied, they have an inciſive, emollient, and detergent Vir-

tue; and that, inwardly taken, they are diuretick and aperient.

From what has been hitherto ſaid, concerning the Manner of diſcovering the Virtues of Medicines, the following Rules, or Axioms, may be laid down.

1. Nothing is of greater Conſequence in inveſtigating the Principles by which Mixed Subſtances act on the Human Body, than the Obſervation of the Analogy that there is between them and Things commonly known; for it is only by comparing Things unknown with thoſe that are known, that we come to diſcover their Virtues. Thus, for Inſtance, it is much more proper to attribute the Effects of Mixed Subſtances to the Sal Ammoniac, Tartar, Allum, Vitriol, Nitre, Sea-Salt, eſſential or fœtid Oil, contained in them, and ſuch-like; than to have Recourſe to Acids and Alcali, Fire, Air, Water, and Earth, which are never obtained pure from any Mixture; or to Heat, Cold, Dryneſs, and Moiſture, by which the Properties of no Body can ever be diſcovered.

2. All Animal Subſtances contain a gelatinous Fluid, which is eaſily extracted from Skins, Fleſh, Bones, Horns, *&c.* by long boiling them in a large quantity of Water. This Juice differs but little from Blood and Lymph, and is chiefly compoſed of Sea-Salt, Sal Ammoniac, and Oil. If theſe three Principles are ſeparated by the Force of Fire, or by Fermentation, a large quantity of alcaline urinous Salt, and alſo of thick Oil, is obtainable; but nothing like an acid Salt diſcovers itſelf, except in freſh Urine and Sweat; it being either all changed into an alcaline urinous Salt, by its Combination with Sulphur, or remaining locked up in the other Parts, in Form of fixed Salt, of which a very ſmall Portion is obtainable by Fire. Inſects however, ſuch as Worms,

Ants,

Ants, *&c.* are to be excepted; from which a ſmall quantity of nitrous acid Salt may be got by Diſtillation.

3. It is not to be thought that all acrid urinous Salts are exactly alike: Some of them approach to the Nature of Sea-Salt, as volatile Salt of Urine, as appears by the Taſte; neither is that ſo cauſtick as the Salt of Blood. Salt of Hartſhorn is formed into little Branches, ſomething reſembling Horns; but Salt of Urine, when cryſtallized, runs into little Cubes. The ſame Obſervation is to be made concerning Oils; for tho' all animal Oils abound with active Parts, by virtue of which they are ſucceſsfully applied to ſtrengthen weak and paralytic Joints, to reſolve Obſtructions in the Nerves, and attenuate the Fluids of the Body; yet ſome of them are not only active, but cauſtick and irritating to a great degree; ſuch as the Oil of Ants, Cantharides, *&c.*

4. All Vegetable Subſtances have an eſſential Salt, compounded of an acid, an urinous alcaline Salt, Earth, and Oil, as appears by their Analyſis.

5. Mixed Subſtances which yield much acid Phlegm, and Earth, and have not a Styptick Taſte, contain a Salt like Tartar, or Cream of Tartar; and which has the ſame Virtues with theſe.

6. If to the Parts juſt mentioned a Styptick Taſte be joined, then the Salt they contain is of the aluminous Kind, and its Virtues the ſame.

7. Whatever gives a blackiſh, or purple Colour, to an Infuſion of Galls, contains a Salt like Vitriol.

8. Whatever flaſhes with burning Charcoal, abounds with a nitrous Salt, or ſomething near a-kin to it. Such Plants are Pellitory of the Wall, Marygold, *&c.*

9. Plants that contain a large quantity of viſcid mucous Juice, by which the other Principles are in-

volved, act chiefly by virtue of ſuch Mucilage, much after the manner of Gum Tragacanth.

10. There are ſome Vegetables whoſe Action does not ſo much depend on their eſſential Salt, as on the fine Oil they contain, which is from thence termed their eſſential Oil. Whatever Plants have a ſtrong aromatick Smell, abound with this Oil; and they yield it when diſtilled with a large quantity of Water.

11. Subſtances that have a diſagreeable, fœtid Scent, act by virtue of the fœtid eſſential Oil they contain: Such are Rue, Caſtor, *&c.*

12. Subſtances that ſmell like Opium, are lenient and anodyne.

13. After all the Chymical and Phyſical Trials which we make, in order to diſcover the Nature and Action of Mixed Subſtances, we are not immediately to uſe them in Phyſick, till we are ſure that no Inconveniency will attend them, either from their being already made uſe of by Phyſicians of our own Time, from the Authority of Writers that deſerve to be believed, or from frequent Experiments made with them upon other Animals.

14. The Rules already laid down may undoubtedly be of great Uſe, in diſcovering the Properties of Mixed Bodies; but there are other Medicines termed Specificks, whoſe manner of acting on the Human Body cannot be diſcovered by any Means hitherto known. Moſt of them have been found out by mere Accident; and more may ſtill be found, by an accurate and unwearied Obſervation of all that happens to Men or Brutes, both healthful and diſeaſed, from the Uſe of different Subſtances, either as Food or Phyſick. The Neceſſity and Uſefulneſs of ſuch Obſervations cannot be too much inculcated on Students in Phyſick, as being a more ſure way to improve and extend that divine Art, than the moſt

ſubtle

ſubtle abſtracted Reaſonings of the greateſt Theoriſts that ever lived. The Antifebrile Virtue of the *Peruvian* Bark was diſcovered by Chance. Some Trees which bear it being blown into a Canal, or Pool of Water, lay there till the Water acquired ſo bitter a Taſte that no Perſon could drink it; one of the neighbouring Inhabitants, however, being ſeized with a violent hot Fit of an Ague, and finding nothing elſe to quench his Thirſt, ventured upon a large Draught of this bitter Water, which cured him of his Fever and Thirſt at the ſame time. This being made known by him, for the Benefit of his Neighbours, the ſame Water was uſed by many, with equal Succeſs: But the Trees coming at length to rot, the Water loſt its bitter Taſte, and Virtue likewiſe; but upon a diligent Search after the Cauſe of this Bitterneſs, they at length traced it up to the Bark of theſe Trees; which has ever ſince been made uſe of, as the moſt certain Remedy for Intermitting Fevers of all Kinds.

PART II.

The Mineral *Kingdom.*

SECT I.

Of WATERS.

THE Waters uſed in Phyſick are either Simple or Mineral. Simple, or pure Water, is a fluid tranſparent Body, void of Taſte and Smell; but no Water can be found abſolutely pure, that is, without any Mixture of earthy, ſaline, or ſulphurous Subſtances. Thoſe therefore are to be eſteemed Simple Waters, in which theſe heterogeneous Bodies are not in ſo great quantities as to be obvious to our Senſes; and the other Waters, in which theſe Subſtances are eaſily perceivable, are termed Mineral.

CHAP. I.

Of the more Simple Waters.

THE more Simple Waters here meant are thoſe of Springs, Rivers, Wells, Rain, Snow, and Lakes. The beſt Water is that which is moſt limpid, thin, and light, altogether without Smell or Taſte, which does not lie heavy on the Stomach, but

but ſoon paſſes; which is ſooneſt hot, and ſooneſt cools again; which ſooneſt boils Fleſh and Ligaments, and moſt readily mixes with Soap. The worſt Water for common Drink is that which is muddy, ſtagnant, or impregnated with any bad Qualities of the Earth through which it paſſes.

Every body knows how much Water is uſed, both to extinguiſh Thirſt, and in the Preparation of our Aliments and Medicines. Water is provided by Nature for the common Drink of all Animals, in all Countries; and is undoubtedly more proper than any other Liquor. It aſſiſts the Digeſtion and Diſtribution of our Food, and the Fluidity, Smoothneſs, and Sweetneſs of the Chyle, by preventing Acrimony, or too great Heat. It keeps the Urinary Paſſages free and open, promotes the due Excretion of the Fœces, and inſenſible Perſpiration. It allays the Heat, dilutes, and facilitates the Motion of the Blood, and all the other animal Fluids. It ſoftens the ſolid Parts, and renders them flexible when too rigid. On theſe, and many other Accounts, confirmed by certain Experience, it is advantageous both in Sickneſs and Health. Sick People ought to drink it warm; and even by thoſe who are well, it ſhould never be drank exceſſively cold; ſuch Water being very offenſive to the Nerves, creating Stupors, Palſies, and Cholicks, obſtructing Digeſtion, and hindering the Motion of the Blood, and other Fluids. Neither is too large a quantity of warm Water without ſome Inconveniencies; it relaxes and weakens the Fibres of the Stomach, and, by that Means, carries the Contents thereof into the Inteſtines, before they are ſufficiently concocted.

We muſt not here omit taking notice, That one Dr. *Hancock*, a Divine of the Church of *England*, has extolled Cold Water as a very great Sudorifick, and a never-failing Remedy in Fevers. He has attempted to prove, by Obſervations, that both Intermittent

termittent and Continual Fevers, even thoſe of the Malignant and Putrid Kind, the Small Pox, Meaſles, *&c.* may be cured by drinking cold Water in the Beginning of the Diſtemper, till the Patient ſweats plentifully. In Agues, juſt before the Fit, and in Continual Fevers before the Exacerbation, or at the very firſt Appearance of the Diſtemper, he orders Children to drink between ſix and eight Ounces of very cold Water, and grown People between a Pint and a Quart, in the Space of a Quarter or Half an Hour; the Patient lying in Bed, and being covered no warmer than when in Health. In a very ſhort time after a plentiful Sweat appears, or, at leaſt, an agreeable and ſalutary Heat is diffuſed through the whole Body. This firſt Doſe very often carries off the Diſtemper; but if it does not, it is to be repeated before the Paroxyſm or Exacerbation, as before; and the Author declares that he very ſeldom had Occaſion to repeat it above once more. There is likewiſe a Friar of *Malta*, Diſciple to one *Roveda*, a *Spaniard*, that practiſed Phyſick at *Naples*, who pretends to cure all Diſeaſes both Acute and Chronical, by the Uſe of Cold Water alone. He orders his Patient to drink ten or twelve Pints, or more, every twenty-four Hours, and to uſe a very ſpare Diet; ſome of them having lived for twenty, thirty, and even ſixty Days, upon nothing but Water; and it muſt be owned, that many have been cured by this Method. In Dyſenteries, Inflammations, and Obſtructions of the Viſcera of the Abdomen, he ſometimes throws in Water by way of Clyſter, and with good Succeſs. This Monk differs from Dr. *Hancock* in the Quantity of Water which he preſcribes, and in this alſo, that inſtead of Sweating, he does what he can to make the Water paſs by Urine or Stool; and, to this End, he does not allow his Patients to lie in Bed, but orders them to walk in the open Air. The Syſtems of theſe two Doctors ſeem,

as

as yet, more to be wondered at, than put in Practice. Time, and farther Experiments, muſt determine the Merit, and fix the Limits thereof.

Water is likewiſe outwardly applied in Bathing. A warm Bath, moderately uſed, is healthful to moſt People. It deterges and opens the Pores, and, by the Water's inſinuating itſelf into them, the Solids are relaxed and ſoftened, the Fluids diluted and attenuated; and the Circulation and Perſpiration promoted. For theſe Reaſons, it is found ſo beneficial to weary Limbs, and in violent Pains; and it is juſtly recommended, in Nephritick Complaints, Inflammations, and Obſtructions of the Bladder, Kidneys, Inteſtines, and other Viſcera of the Abdomen; and it has likewiſe been found of Service in ſome Cutaneous Affections. It muſt, however, be obſerved, that the Warm Bath is very prejudicial to ſome Perſons, eſpecially if they have not been accuſtomed to it; ſuch are thoſe of a Plethorick Habit, or who are full of groſs Humours, or ſubject to Catarrhs; as likewiſe it is ſeldom proper in acute Fevers, Deliria, Looſeneſſes, or Hemorrhages; and is more eſpecially diſſerviceable to thoſe who labour under a Debility of ſome Noble Viſcus; becauſe the Fluids being attenuated and diluted, may be carried in too great Quantity, or with too great Force, to the affected Part. Laſtly, Hypochondriacal Perſons ſeldom find any Advantage from it.

Though the Cold Bath be leſs agreeable, and much leſs uſed, the Uſe of it ought, by no means, to be rejected; becauſe, if any Credit is to be given, either to the Ancients, or to many of the Moderns, it is a moſt powerful Remedy in many Caſes. It is often recommended by *Hippocrates* himſelf; and it was a Cuſtom among the *Romans* to go from the Hot Bath into the Cold; and *Galen*, who approves that Practice, ſays, that by this Means the Limbs and Skin are ſtrengthened, and thereby Health confirmed, ſuch Perſons

Perſons being leaſt liable to be affected by the Changes of Air or Weather. This Cuſtom is thought to have been introduced by *Antonius Muſa*, who having cured the Emperor *Auguſtus* of a dangerous Catarrh, by the Cold Bath, recommended it afterwards in almoſt all Diſeaſes; and it was by his Advice that *Horace* left the Hot Baths of *Baiæ*, as being hurtful to his Eyes, and uſed the Cold Baths of *Cluſium* and *Gabii*, as he tells, *Epiſt.* 15. *Lib.* 1.

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Muſa ſupervacuas Antonius, & tamen illis
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In *Pliny*'s Time, Cold Bathing was ſo much the Mode, that even Men of Conſular Dignity ſtrove to outvy one another in ſhaking and trembling in the coldeſt Water they could meet with; and *Seneca* valued himſelf on having the Title of *Pſuchroluta*, and that he was able to dance in cold Water on the Firſt Day of *January*. In all this there was undoubtedly an Exceſs. Bathing in moderately cold Water is of uſe to check the exorbitant Heat of the Fluids, to contract the Pores, to ſtop too great Perſpiration, and to brace the Fibres of the Muſcles, and thereby increaſe their Strength. Some Years ago, the Cold Bath began to be very much uſed in *England*, in Hectick Fevers, Hemorrhages, Inflammations, Eryſipelas, the Gout, Hypochondriack Affections, Barrenneſs, the Rickets, Convulſive Aſthma, and many other nervous Diſtempers. It is only to be uſed in the Summer, by Perſons of a ſtrong Conſtitution, and hot Temperament; infirm and aged Perſons, and Children, ought to abſtain from it, as alſo they who labour under a Suppreſſion of the Hæmorrhoids, Menſes, or Lochia, who are ſubject to Cholick Pains, or an Hemiplegy, or who have any Ulcers, either

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CHAP. II.

Of Mineral *Waters.*

MIneral medicated Waters are either Cold or Hot. The firſt are termed *Acidulæ*, becauſe of the ſubacid or urinous Taſte, which they are all ſuppoſed to have when freſh drawn. The other are called *Thermæ*, by which Word the *Greeks* expreſſed them. The only probable Cauſe that can be aſſigned for the Heat of theſe Waters, is ſubterraneous Fire warming the Veins and Receptacles where they lie; and accordingly, we find them moſt frequent near Vulcano's, and they all ſmell of Sulphur or Bitumen, the moſt inflammable Subſtances under Ground, and

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which are found in great Plenty in the Fields near ſuch Springs. The Virtues of theſe Waters do not depend on their being Hot or Cold, but on the different Subſtances of which they are compoſed. Theſe may be reduced to four Kinds, Earth, Sulphur, Salt, and Metal; from all of which though Water perhaps is never found entirely free, they will nevertheleſs ſerve as general Heads, under which all Mineral Waters may be claſſed; ſome one of them being commonly in a much greater Proportion than the reſt, and the Virtues of theſe Waters depending chiefly thereon.

Art. I.

Of Mineral Waters mixed with Earthy Parts.

AMong the Mineral Waters that abound with Earthy Particles, none is more in Uſe than the ſaponaceous Spring of *Plombiere* in *Lorrain*; the Water of which, at its Source, is limpid and warm; hath a greaſy, ſoapy Taſte, but withal a little rough upon the Tongue. It contains a fine fat Clay, like Soap, and is mightily cried up in Diſeaſes of the Stomach proceeding from Acidity, in an acid Diſpoſition of the Blood and other Fluids, Spitting of Blood, Hemorrhages, Conſumption, convulſive Aſthma, Aſcites, Diabetes, Fluor Albus, Dyſentery, and in all Diſeaſes of the Skin. Externally applied, it deterges and dries up Ulcers; and taken inwardly, it ſometimes proves gently Cathartick. It is to be drank in the Morning faſting, from one Pint to Six. For the uſe of thoſe, who have not the Conveniency of going to *Plombiere*, many artificial Waters of the ſame Nature may eaſily be prepared. About three Drachms of the ſaponaceous Earth, taken up at the Source of this Spring, may be diſſolved in good common Water, or in any other that may be thought moſt proper for the Patient: Or, inſtead of this

Earth,

Earth, Terra Sigillata, common Bole, Chalk, Coral, or Crabs-Eyes, reduced to an unpalpable Powder, may be mixed with Water in the ſame Proportion. But nothing will better ſupply the Place of theſe Waters, than the White Drink very much uſed among the *Engliſh*, which is made in this manner: Take of burnt Hartſhorn prepared, and fine Crumbs of Bread, of each two Ounces; boil them in three Pints of good Water, to a Pint and an half, and to the ſtrained Decoction, add two Ounces of white Sugar, or of any proper Syrup.

ART. II. *Of Waters impregnated with Salts.*

OF the Mineral Waters that contain Salts, ſome are impregnated with a Salt like *Sal Gemmæ*, ſome with Sea-Salt, and others with a foſſile alcaline Salt, like the *Natrum* of the Ancients. Between the firſt two Kinds there is this Difference, that *Sal Gem* is pure and ſimple, whereas Sea-Salt is really compounded of *Sal Gem*, a foſſile alcaline Salt, and a volatile urinous Salt, ariſing from putrified Fiſhes, Plants, &c. with ſome Portion of Bitumen. To this Mixture is owing the bitter Taſte of Sea-Salt, and the agreeable Scent, which it yields, when chymically treated.

The Waters of *La Trauliere* in the *Bourbonois*, and of *St. Pierre* near *Clermont*, are impregnated with *Sal Gem*. Thoſe of the Sea, of *Bourbon Luncie* in *Burgundy*, of *Dancauſe*, of *Balarruc* in *Languedoc*, of *Bourges*, and ſome others of leſs Note, owe their peculiar Virtues to a Mixture of Sea-Salt.

The diſagreeable Taſte of Sea Water prevents the internal Uſe of it; but externally it is recommended for the Itch, Scurvy, Ringworm, Elephantiaſis, Tumors, and Pains in the Limbs; and it is eſteemed a Specifick in the Hydrophobia. In Places remote from the Sea, a ſtrong Solution of Sea-Salt

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in Water has been ſucceſsfully uſed, as was experienced lately at *Paris*; where a Woman of about twenty Years of Age, bit by a mad Dog, was perfectly cured, in one of the great Hoſpitals, by being frequently dipped in this Solution. The Mineral Waters that contain *Sal Gem* or Sea-ſalt, taken inwardly, vellicate the Inteſtines, and thereby are purgative and diuretick: For the ſame Reaſon they are aſtringent and diſcutient, and are frequently found to be ſerviceable in Dropſies, and other bad Habits of Body. Externally, they deterge and cleanſe putrid Ulcers, and are uſeful in Catarrhs, Stupors, Spaſms, Palſies, and œdematous Tumors.

A foſſile alcaline Salt is found in the Waters of *Archimbault* in the *Bourbonois*, thoſe of *St. Reine*, of *Mont d'Or* in *Auvergne*; which laſt, however, contain but a very ſmall Portion of this Salt. Theſe Waters are generally ſaid to be nitrous; not that they contain a Salt like what we now call Nitre, or Salt-Petre; but a Salt like the Nitre, or *Natrum*, of the Antients, which is of an alcaline Nature, very much reſembling Salt of Tartar. For, after the Waters have been evaporated, the Salt that remains at the Bottom of the Veſſel, being thrown upon burning Charcoal, does not deflagrate, like Nitre, but like an Alcali, cauſes an Effervеſcence when mixed with Acids, turns the Syrup of Violets green, makes the Solution of corroſive Sublimate turbid, and precipitates a yellow Sediment. The Waters that contain much of this Salt are cathartick and diuretick. They likewiſe attenuate thick viſcid Humours, and are proper in Caſes of Vomiting, Loſs of Appetite, Cholicks, Palſy, Jaundice, and Nephritical Affections. It ought, however, to be obſerved, that no Mineral Waters are to be preſcribed in a Suppreſſion of Urine, except it be known that the Diſorder does not proceed from a Stone; for, otherwiſe, the Obſtruction muſt be increaſed, to the great Detriment of

of the Patient. Theſe Waters are likewiſe uſed externally for diſſolving Tumours and Schirrhus's, for diſcuſſing Obſtructions in the Nerves, and for Palſies; and for theſe Purpoſes the Patient is ordered either to bathe, or to receive the Water falling from a great Heighth on the Part affected. By this laſt Contrivance, the Water penetrates further, the ſaline Particles diſſolve the coagulated Fluids more effectually, and a greater quantity of Spirits ruſh towards the Part. In all Fevers, and other inflammatory Diſtempers, the uſe of theſe Waters, whether external or internal, is to be avoided; becauſe the ſaline Spicula will irritate the Parts, and increaſe the Inflammation.

Artificial ſaline Waters may be made, which ſhall be indued with the ſame Virtues as the Natural ones. Thus, with the *Sal Catharticum Amarum*, or *Sal Mirabile Glauberi*, a Water may be prepared like thoſe impregnated with *Sal Gem* or Sea-ſalt, which purges gently, without Irritation or Heat; and may therefore be ſucceſsfully uſed in Hypochondriacal Affections from a hot Cauſe, in want of Appetite, *Cholera Morbus*, Cholicks, and in all Diſtempers that ariſe from a viſcid Lymph, obſtructing the Glands, which it both diſſolves and evacuates. The beſt way of making theſe Waters is this: Diſſolve three Pounds of common Sea-ſalt in clear Water; and, having filtred the Solution through Cap Paper, drop into it highly rectified Oil of Vitriol, till the Effervescence ceaſes: Then diſtil the Mixture in a Glaſs Retort, and calcine the remaining dry Maſs over an open Fire in a Crucible, which being afterwards diſſolved in warm Water, and filtred as before, the Solution, evaporated to a Pellicle, is to be ſet to cryſtallize in a cool Place, and the Cryſtals taken off from time to time are to be dried in the Shade, and kept for Uſe. An Ounce, or more, of this Salt, diſſolved in a Quart or three Pints of warm

Water, is to be drank faſting in the Morning, in the ſpace of two Hours.

In the ſame manner may be made artificial Mineral Waters, of the ſame kind with the alcaline ſalt Waters, with fixed Nitre, ſoluble Tartar, the Duke of *Holſtein*'s Salt, *&c.* Artificial warm Baths may likewiſe be prepared with what is called the *Aqua Matris Nitri* (Eau Mere de Nitre) or with Nitre and Tartar calcined in equal Parts. Thus, for the Palſy, Rheumatiſm, or Sciatica, the following Bath has been found of great Service: Take the Leaves of Mallows, Marſh-Mallows, Chamæmile, Mellilot, Southernwood, Tanſy, and Sage, of each a large Handful; the Roots of white Briony, round Birthwort, and common Flower de Lis, of each four Ounces; Laurel Berries, and Jujebs, of each two Ounces, and a Pound of the *Aq. Matris Nitri:* Boil all theſe Ingredients in a quantity of Water ſufficient for a Bath, which is to be uſed warm, Morning and Evening, at the greateſt Diſtance from Meals; and while the Patient ſits in this Bath, the ſame Decoction may be pumped upon the affected Parts.

ART. III. *Of Sulphurous Waters.*

SUlphurous Particles are contained in many Mineral Springs, which may be known by their fœtid inodorous Smell, like that of the *Hepar Sulphuris*, and by the Inflammability of the Sediment which is left after the Water is evaporated; for this being thrown upon burning Charcoal, ſends out a fine blue Flame, and ſmells like burning Brimſtone. The Waters that abound moſt with Sulphur, are thoſe of *Bagnole*, near *Argenteuil* in *Normandy*; which, taken inwardly, are celebrated for Diſeaſes of the Breaſt, Aſthmas, Conſumptions, Scurvy, Itch, and other Diſeaſes of the Skin. They are uſed externally for the

the ſame Purpoſes, and eſpecially for the Rickets in Children. Artificial ſulphurous Waters are eaſily prepared by quenching burning Brimſtone ſeveral times in Water; but the diſagreeable Taſte thereof makes them unfit for internal Uſe. Several Preparations of Sulphur make more agreeable Waters; and a warm Bath of this kind, nothing inferior to the natural ones, may be made in the following manner: Take equal Parts of Nitre, crude Tartar, and Sulphur; mix them well, and throw the Powder by Degrees into an ignited Crucible, and when the Deflagration is over, ſet the remaining Maſs in a Cellar, to run *per deliquium*. Two Ounces of this Liquor, well filtred, will ſerve for a quart of Water.

Art. IV.

Of Waters impregnated with Metallick Particles.

I Know no Waters in *France* that are impregnated with any other Metal but Iron, *viz.* Thoſe of *Forge* and *Paſſy*. The Waters of *Forge* contain a fine ferruginous Earth, with a ſmall Portion of Salt, of the Nature of Sea-ſalt. In thoſe of *Paſſy*, beſides the ſame Kind of Earth, is found a Salt, reſembling the *Natrum* of the Ancients. Both Waters have a ferruginous, or vitriolick Taſte; and, being mixed with the Infuſion of Galls, they turn it of a blackiſh, or dark violet, Colour. The Waters of *Paſſy* operate by Urine and Stool, and are ſerviceable in Vomitings, Looſeneſs, Spitting of Blood, a Suppreſſion or immoderate Flux of the Menſes, a Diabetes, Obſtructions of the Spleen and Liver, Jaundice, Melancholy, and Hypocondriacal Diſorders. In ſcorbutick Habits they open Obſtructions of the Kidneys, Bladder, and Uterus; but are very prejudicial in Hectick Fevers. Chemiſtry furniſhes us with ſeveral Preparations of Steel, with which theſe

Waters may be imitated by Art; ſuch are the Salts and Tinctures of that Metal; but the natural Water ſeem to me very much preferable to any that can be artificially prepared; becauſe the Metallick Particles with which they are ſtored, are extremely ſubtle and attenuated; ſo that they make no Alteration in the Heat or Tranſparency of the Water; and, merely by being expoſed to the Air, they loſe their Taſte and Virtue; and likewiſe becauſe they may be drank in much larger Quantities than artificial Waters, whereby the viſcid and coagulated Juices are more effectually attenuated, and too tenſe and rigid Fibres relaxed. For this Reaſon, the artificial Waters ought to contain a very great Proportion of ſimple Water; and where the natural cannot be had, the following ſeem to be contrived in the beſt manner poſſible to ſupply their Place. Having reduced to Powder equal Parts of Filings of Steel and Tartar, pour upon them as much *French* Brandy as will ſtand four Fingers breadth above the Surface, and ſet the whole to digeſt in the Sun, in a cloſe Veſſel, ſtirring it now and then, till the Maſs is dry. This is again to be powdered, and new Brandy put to it, and the whole Operation repeated, till the Steel is perfectly diſſolved. Then the Preparation may either be made up in Balls, or kept in Powder; and a Drachm thereof being infuſed in eight Ounces of ſtrong Wine for one Night, the Tincture is to be mixed with two quarts of common Water, and the whole to be drank warm, in the ſpace of two or three Hours in the Morning, faſting. A Water of the ſame Kind may be prepared, by diſſolving ten Grains of the Vitriol of Iron in a quart of Water.

SECT.

SECT. II.

Of EARTHS.

WE here conſider Earth, not as a Chemical Principle or Element, but as a foſſile mixed Body. Earths may in general be diſtinguiſhed into Clays and Sands. Clays conſiſt of very fine Parts; and, being gradually wetted with Water, become firſt glutinous, and then turn to Mud. Being mixed with a great quantity of Water, they are a long time in ſubſiding; and, when dried, they become very hard. Sandy Earths are a Congeries of Particles of different Sizes, Figures, and Colours. They never become viſcid by being mixed with Water, but immediately ſubſide. Common Earth is compounded of both theſe Kinds. The Medicinal Clays are of four Sorts; *Argillæ*, or Clays, properly ſo called, Boles, Marls, and Chalks; of each of which in order.

CHAP. I.

Of Clays, properly ſo called.

CLAY, as here underſtood, is a ponderous Earth, denſe, fat, viſcid, and ſlippery. Being held for ſome time in the Mouth, it makes an Impreſſion on the Tongue, ſomething between that of Soap and Fat. When freſh dug, it may be moulded into any Figure, like ſoft Wax; and, by Fire, it may be made as hard as a Stone. The Species of Clay are almoſt innumerable; ſome are white, re-

sembling Suet, such as that saponaceous Earth with which the Waters of *Plombiere* in *Lorrain* are impregnated; some are variegated, like the different Kinds of Porphyry and Marble, as certain Earths found in *Bohemia*: Others are of an Ash Colour, Red, Black, *&c.* The Clays used in Physick are, the *Lemnian* Earth, the Earth of *Malta*, and several other sealed Earths from *Germany*.

Art. I. Of the Lemnian Earth.

Terra Lemnia Dioscoridis,
Σφραγὶς ἀγία, seu sigillum Capræ veterum, } Officin.
Terra sigillata vera seu Turcica,

THE *Lemnian* Earth is a fat, viscid, slippery Clay, of a pale Red Colour. It is brought to us in little Cakes, or Troches, marked with different Characters, each weighing about four Drachms. It has its Name from the Island of *Lemnos*, where it is dug; and it is not a little surprising to find how much this Earth has been celebrated in all Ages. Even in the Time of *Homer* and *Herodotus*, a great many very solemn Rites were observed in digging it. In *Dioscorides*'s Days, it was made up with the Blood of a She-Goat, newly killed, and the Priests of *Venus* stamped it with proper Images; and from thence it was called *Sigillum Capræ*. In *Galen*'s Time the Goat's Blood was omitted, but many other superstitious Ceremonies still remained; which, when *Petrus Bellonius* was at *Lemnos*, were laid aside, and others substituted in their place. It is dug, says that Author, only on the *Sixth Day of August*; as much being then taken out, as is supposed to be sufficient for a whole Year. When the Vein is opened, the *Greek* Priests rehearse some Forms of Prayer, at which all the considerable Inhabitants of the Island, both *Greeks* and *Turks*, are present. The Vein being afterwards

afterwards cloſed, and covered with common Earth, the Inhabitants are forbid, under the ſevereſt Penalties, to open it any more during that Year. The greateſt Part of this Earth is ſent to *Conſtantinople*, to the *Grand Sultan*, with whoſe Seal it is marked; the reſt is ſold to Merchants, by the Governor of the Iſland, ſometimes with, and ſometimes without, his Seal upon it. *Bellonius* remarks, that at *Conſtantinople* they have the Art of counterfeiting it ſo dexterouſly, that the falſe Earth can hardly be diſtinguiſhed from the true. That *Lemnian* Earth is reckoned the beſt, which, when bruiſed between the Fingers, or held in the Mouth, appears moſt like Fat, and contains leaſt Sand. The Antients have ſaid much about the Virtues of this Earth; but there is ſome room to think that the Reputation it had among them, was more owing to the ſuperſtitious Ceremonies obſerved about it, than to its intrinſick Qualities. *Dioſcorides* commends it as an Antidote againſt Poiſons, and Dyſenteries: *Galen* ſays, that when outwardly applied, it heals all freſh Wounds; and *Fernelius* is of opinion that, whether applied outwardly or inwardly, it ſtops all Fluxes of Blood. Some have celebrated its alexipharmick Qualitys in all peſtilential and contagious Diſtempers; but many of the Moderns think it to be a mere alcaline Earth, endued with no other Quality but that of abſorbing Acids. This, however, muſt be a Miſtake; becauſe no Earths of this Kind raiſe an Effervescence with Acids; and it appears, by its Analyſis, not to be altogether deſtitute of the Virtues attributed to it by the Antients. It yields a ſmall quantity of volatile urinous Salt, of a bituminous Oil, and of a Salt not much different from Sea-ſalt; whence we may conclude that this Earth is impregnated with a kind of Sal Ammoniack, mixed with a bituminous Oil, by which the Action of Acids upon it is prevented; and that its Virtues muſt be in ſome degree

alexi-

alexipharmick, diaphoretick, detergent, and vulnerary. This sealed Earth needs no other Preparation than to be finely powdered, or dissolved in a proper Liquor. In Dysenteries, Ulcers of the Intestines, and Hæmorrhages, it may be administred in Draughts or Bolus's, in the following manner:

Take of Lemnian *Earth, finely powdered, one Drachm; of Syrup of Quinces an Ounce; Plantain Water, and Knot-Grass Water, of each three Ounces: Mix them into a Potion, to be taken by Spoonfuls.*

Take Lemnian *Earth, Conserve of Red Roses, and of Hips, of each half an Ounce; of Syrup of Barberries a sufficient quantity to make them into a soft Electuary; of which the quantity of one Drachm is to be taken Morning and Evening.*

Take of Lemnian Earth half a Drachm; Syrup of Clove-julifloxwers an Ounce; the simple Waters of Balm, Viper-grass, and Blessed Thistle, of each two Ounces; of Treacle-water six Drachms: Mix and make them into a Potion; to be taken by Spoonfuls, several times in the Day.

In external Applications, this Earth is often joined with Bole, as we shall see in the proper Place.

The *Lemnian* Earth is used in *Venice* Treacle, in the Confection of Hyacinth, in *Renodæus*'s Bezoardic Powder, in *Hoffman*'s Orvietan, in the Antivenereal Pills of *Charas*'s Pharmacopœia Regia, in that Author's Plaister for fractured Bones, *&c.*

The Inconveniencies that may arise from using this Earth too long, or in too great Quantities, are common to it with all the other absorbent Earths. They load the Stomach, by adhering closely to, or plaistering

ſtering its inner Surface, which cauſes a very diſagreeable Senſation; and, by ſhutting the Orifices of the Glands of the Stomach and Inteſtines, they hinder Digeſtion, and may occaſion the Fluids that ought to be excreted there, to be carried to other Parts of the Body; from both which Cauſes many Diſorders may follow. The way to prevent Accidents of theſe kinds is to give theſe Abſorbents in ſmall Quantities, diluted with much Liquor, and diligently to obſerve the Effects they produce.

ART. II. *Of the Earth of* Malta.

Terra Sigillata Alba, } Officin.
Terra Sancti Pauli, }

THIS Earth, denominated from the Iſland where it is found, is of a whitiſh aſh-colour; it is dug out of a Cave near the ancient City of *Malta*, and made up in Tablets, with various Figures marked upon them. It is celebrated for its alexipharmick Qualities in the Small-pox, Meaſles, and putrid Fevers; but, above all, it is thought to be an Antidote againſt the Poiſon of Vipers and Scorpions; which Virtue, they ſay, was given to it by St. *Paul*, when he was ſhipwrecked on the Iſland of *Malta*. Veſſels are made of it, which are ſuppoſed to communicate its cordial Efficacy to the Wine or Water, which is poured into them. It is, however, very rarely uſed in Phyſick.

ART. III. *Of* German *Sealed Earths.*

IN the *German* Shops, ſome other ſealed Earths are to be met with; of which the *Terra Strigonienſis*, and *Lignitzenſis*, are the chief. The former, termed by the *German* Writers *Axungia* and *Medulla Soliſ*, is of a yellow Colour, fat like Soap, and

and melts in Water, or when held in the Mouth. It is dug in the Clefts of hard Rocks, in the Hill of *St. George*, among the Gold Mines near *Strigonium*, in *Hungary*. The Magistrates take a great deal of care that it be duly prepared; and, being formed into little Balls, it is marked with the Seal of the Town, and is believed to be impregnated with the Sulphur of Gold. The *Terra Lignitzensis*, or *Goldabengensis*, called *Axungia* and *Medulla Lunæ*, is of a whitish ash-colour, and imagined to arise from Silver. Both these Earths are said to be useful in Malignant Fevers, the Plague, Dysentery, Diarrhæa, and the Bites of venomous Animals. They operate by Sweat; and the Dose is between half a Drachm and two Drachms.

CHAP. II.

Of MARLES.

MARLE is a light, friable Substance, of a middle Nature between Clay and Chalk; being neither so fat as Clay, nor so dense as Chalk; it sticks to the Tongue, and is of various Colours. Of the different Kinds of Marle, only two are used in Physick. The first is termed *Marga Alba*, *officin.* and *Medulla saxorum*; because it is found in the Clefts of Rocks in *Bohemia*, and in the Cavities of some flint Stones (called from thence *Geodes*) as Marrow in Bones.

The other Marle, called *Agaricus mineralis Ferdinandi Imperatoris*, and *Lac Lunæ Gesneri*, is a light friable, fungous, white, insipid Earth, very much resembling the common Agaric. It easily dissolves in Water, and turns it white. It is believed to have a refrigerating and astringent Quality, and to increase the Milk of Nurses; being taken in the quantity

of

of one Drachm, either diſſolved in Broth, or made up in an Emulſion. Some commend it as an Anodyne, and uſe it for a Teneſmus and Dyſentery; and, externally, for drying Ulcers.

CHAP. III.

Of BOLES.

BOLE is a ponderous Earth, more fat than Marle, but leſs ſo than Clay, ſtyptic on the Tongue, ſtaining the Fingers, and of different Colours; ſome being of a deep ſaffron Colour, ſome yellow, and others white. There are but two Sorts of Bole uſed in the Shops, the *Armenian* and Common. The firſt, called *Bolus Armena vera officinarum*, is a ponderous, fat, brittle Earth, of an aſtringent Taſte, of a Colour between Red and Yellow. It is found in *Armenia*, but very little of it comes to us. It is not certain, whether that mentioned by *Galen* be the ſame with that of the *Arabian*, and latter *Greek* Writers; for the firſt was pale, and the other is of a ſaffron Colour. It is poſſible, however, that the ſame Vein may afford Boles of different Colours, as we ſee in the common Sort, which is found in the ſame Spot of Earth, ſometimes white, ſometimes yellow, and ſometimes red. The beſt *Armenian* Bole is that which is moſt eaſily reduced to a fine Powder in a Mortar, or diſſolved in any Liquor; which is without Grit, and when held in the Mouth, ſeems to melt like Butter, leaving an aſtringent Taſte on the Tongue. It is commended by *Galen* in Dyſenteries, and other Fluxes, in Spitting of Blood and Catarrhs, eſpecially thoſe in which a thin Matter falls into the Thorax, and in Ulcers of the Lungs. The ſame Author affirms, that in a great Plague,

Plague, all who uſed this Medicine were cured. Outwardly applied, it is drying and aſtringent, and is therefore proper to ſtop a Flux of Blood from freſh Wounds.

The common Bole is a ponderous brittle Earth, of a Colour between Yellow and Red, of an aſtringent Taſte, and is found in may Parts of *France*. It has the ſame Virtues with the former, and is to be met with in all Shops. As both theſe Boles are frequently mixed with Sand and Grit, the Apothecaries prepare them in the following manner:

They diſſolve them in Water; and, after the Sand alone has ſubſided, they pour the turbid Solution into another Veſſel, where it remains till the Water is clear; being poured off, the Sediment is dried in little Cakes, and kept for Uſe.

They may be preſcribed to be taken inwardly, either alone, or mixed with ſealed Earth, in this manner:

Take prepared or waſhed Armenian *Bole, ſealed Earth, and* Venice *Treacle, of each half a Drachm; of Syrup of dried Roſes, an Ounce; of Plantane Water, ſix Ounces; mix and make them into a Julep: To be taken by Spoonfuls, in Looſeneſſes*, &c.

Take prepared Armenian *Bole, Dragon's Blood, and Maſtich, of each a Scruple; of Roch Alum, fifteen Grains; of Syrup of Comfrey, a ſufficient quantity to make them into a Bolus.* This Bolus is to be repeated every four Hours, till the Flux is ſtopped; together with a Draught of the Decoction of the Greater Comfrey Roots.

In Wounds and Contuſions, theſe Boles, and the Sealed Earth, may be uſed thus:

Take of waſhed Armenian *Bole, a ſufficient quantity; beat it up with the White of an Egg and Roſe-Water into the Conſiſtence of a Cataplaſm, to be ſpread upon Linnen Cloth, and applied to the Part affected, and keep it on by Bandages dipped in Oxycrate.*

Take of Armenian *Bole, Sealed Earth, and Dragon's Blood, of each two Drachms; Aloes, Myrrh, and Colcathar, of each one Drachm: Mix them into a Powder, to be applied to the Part from which the Blood flows.*

Theſe Boles are uſed in ſeveral officinal Compoſitions, in the Confection of Hyacinth, Fracoſtorius's Confection, Gordonius's Troches, the Bezoardic Powder of *Renodæus*, the Ceratum Santalinum, and Plaiſter for Fractures, in the *Pharmacopœia Regia* of *Charas*.

CHAP. IV.

Of CHALKS.

CHALK is a denſe, brittle, earthy Subſtance, which readily ſtains the Fingers, and ſticks to the Tongue, without any Aſtringency. Different Kinds of Earth come under the Denomination of Chalk; among which thoſe uſed in Phyſick are the White Chalk, and Red Oker.

White Chalk, or *Terra Cretica*, is ſo called from the Iſland of *Crete*, where the beſt ſort was formerly found; but we now meet with it in many other Countries.

tries. It raiſes an Efferveſcence with acid Liquors, and is therefore deſervedly looked upon as an Alcaline, or Abſorbent Earth. It is uſed with Succeſs to allay the too great Acidity of the Juices of the Stomach; particularly in the Diſeaſe commonly known by the Name of the *Heart-Burn*; and alſo in Coughs, that ariſe from a ſharp Phlegm. It is likewiſe ſerviceable in Hæmorrhages, and is ſaid to kill Worms. In a Word, the Property of all alcaline Earths is not only to abſorb Acids, but to allay the Acrimony of the Fluids, and eſpecially to reſtrain the violent Motion of the Bile, by detaining the Salts and Sulphurs thereof in their fixed Parts. White Chalk is given alone, from ten Grains to a Drachm: It is likewiſe uſed in the *Decoctum Cretaceum* of *Bates*, which is thus prepared:

Boil half a Pound of powdered Chalk in three Pints of Water to a Quart; and, when the thicker Parts have ſubſided, pour off the clear milky Liquor, and add to it a proper quantity of Sugar of Roſes, or of any other proper Syrup.

An Emulſion may likewiſe be made of this Decoction, by pouring it, by degrees, on two Drachms of each of the four Greater Cold Seeds, bruiſed in a Mortar; and then adding to the ſtrained Liquor two Drachms of Chalk finely powdered, and five Ounces of the Syrup of Colt's Foot, Comfrey, or any other ſuitable to the Intention. The Patient is to drink plentifully of either of theſe Liquors.

Powdered Chalk is likewiſe given with Milk, to prevent its turning acid in the Stomach; and, externally, it is commended for drying Wounds, Ulcers, and Fiſſures in the Nipples.

SECT. III.

Of STONES.

STONES are ſolid, hard, foſſile Subſtances, not ductile, nor capable of being diſſolved in Water or Oil. They are divided into Common and Precious. Common Stones differ from one another, as their Subſtance approaches moſt either to Clay, Sand, or Cryſtal; and as they are diſpoſed, either in Filaments, thin Plates, or Squammæ. And to theſe may be added Figured Stones, and Petrifications. Precious Stones are opaque, imperfectly tranſparent, or perfectly ſo, which laſt are termed Jewels. Of all theſe various Kinds of Stones, very few are uſed in Phyſick, though extraordinary Virtues have been aſcribed to many of them; but theſe Conceits have had their Riſe, not from any certain Experiments, but merely from Credulity.

CHAP. I.

Of the Lime-ſtone, and Lime.

THE Limeſtone is a hard, ponderous, rocky Stone, of different Colours in different Countries. It is reduced to Lime by the Action of Fire upon it. If Water be poured upon Lime, it makes firſt a very great Noiſe, then grows hot, and afterwards turns to a ſoft white Maſs; but calcined Lime-ſtones, if expoſed to the moiſt Air for ſome time, may be reduced to a fine Powder. Quick-

lime is Corroſive and Cauſtick, and is therefore never uſed inwardly. But, from a Lixivium of Quick-lime and Potaſh, the Surgeons prepare a Cauſtick, which burns the Part to which it is applied, leaving a Cruſt, or Eſchar, behind. Slaked, or Waſhed Lime, does not corrode, but powerfully dries; and is applied in that Intention to obſtinate Ulcers. The Water in which Quick-lime is waſhed, called Lime-Water in the Shops, is uſed externally to the ſame Purpoſe, either alone, or impregnated with corroſive Sublimate, in what is called Phagedenic Water, which is likewiſe uſed with Succeſs to eat away fungous or ſuperfluous Fleſh; and, when mixed with Spirit of Wine, or Spirit of Vitriol, it conduces to ſtop the Progreſs of a Gangrene. Lime-Water, tinged blue with Vitriol of Copper, and intimately mixed with Oil of Roſes, makes the famous Liniment for Burns; and, when impregnated with a Solution of Sugar of Lead till it turns Milky, it is applied, by way of Fomentation, to Scabs, foul Ulcers, and St. *Anthony*'s Fire.

In the Opinion of *Morton*, and other experienced Phyſicians, Lime may ſafely be given inwardly, for the Cure of old obſtinate Ulcers, whether internal or external. It is likewiſe very much commended for healing the Lungs; for, by throwing off the ſaline acrid Parts of the Blood through the Urinary Paſſages, the whole Maſs being thus corrected, the Ulcers are much more eaſily cured. The Method of giving it inwardly is this:

Take of Sarſaparilla, in thin Slices, ſix Ounces; Currants, half a Pound: Boil them in three Quarts of Water, and in the ſtrained Decoction ſlack half a Pound of Quick-lime. After it has ſufficiently ſubſided, pour off the Liquor by Decantation, and keep it in Glaſs Bottles, well corked, for Uſe. It is given in the quantity of four Ounces, two or three

times

times a Day, at Medical Hours. Morton likewiſe recommends it for the Cure of ſcrophulous Tumors proceeding from the Meaſles.

Chemiſts have been at much Pains to procure the Salt, Spirit, Tincture, and Oil of Lime, but all to no Purpoſe; for what they pretend to have obtained from any of theſe Subſtances, came rather from what was mixed with the Lime, than from the Lime itſelf. Lime is uſed in preparing the volatile Salt of Urine, and the Sal Alcali Baſilianum.

CHAP. II.

Of TALCK.

TALCK is a ſhining, fiſſile Stone, eaſily diviſible into very thin pellucid *Laminæ*, a little flexible. In the Fire it does not melt, is not calcined, nor does it loſe its Colour. Some Talck is of a Silver Colour, called by the Chemiſts *Argyrolithos*; ſome Yellow, called Solar Talck; ſome Greeniſh, and ſome Black. That which is brought from *Venice* is reputed the beſt, and is of a light Green Colour. This Stone is ſeldom uſed in Phyſick, but is very much in Vogue as a Coſmetic; the Ladies being of Opinion that it cleanſes and whitens the Skin.

It is firſt of all to be prepared by being reduced to an impalpable Powder; which can be done no way ſo readily as by heating it red hot ſeveral times in the Fire, and as often quenching it in cold Water; for, by this Means, it may eaſily be levigated on a Porphyry Stone, to any Degree of Fineneſs, the Powder being of a ſhining Silver Colour, and very ſmooth to the Touch. Of this Powder the Women make Ointments, or Pomatums, which they uſe as

a Waſh. Some Chemiſts have endeavoured, by the Oil of Talck, to fix Quickſilver, and afterwards turn it into Silver; but they never conſidered that what they called Oil of Talck, was entirely the Product of the other Subſtances mixed with it.

CHAP. III.

Of the Eagle Stone.

THIS Stone is made up of Scales, or ſtony Cruſts, and is hollow within. In this Cavity there is ſometimes another Stone contained, ſometimes a kind of Gravel, and ſometimes Clay. They are of a whitiſh, or aſh Colour, and ſometimes like Iron. Their outer Surface is rough and uneven, their Figure generally oval, and their Size various. Some Authors reſtrain the Name of Eagle Stone to ſuch as contain either another Stone, or Gravel, and conſequently make an audible Noiſe when ſhook; calling thoſe which contain Earth *Lapides Geodes*; but I rather chuſe to call all ſcaly hollow Stones, Eagle Stones; and apply *Geodes* to thoſe which are as hard as Flint, whether they contain Earth, or are incruſted or lined with Cryſtal. It is called the Eagle Stone, either becauſe it is ſaid to be ſometimes found in the Neſts of Eagles, or from its Colour; or becauſe, according to ſome, Eagles cannot hatch their Young without it.

It is found in many Places; but that which comes from the *Levant* is preferred to the reſt. It is believed by ſome to be of wonderful Efficacy in promoting Delivery, if laid to the Woman's Thigh, who is in Labour; but if tied to the Arm, it is ſaid to prevent Miſcarriage. It muſt, they pretend, be removed immediatly after the Birth, leſt it not only draw out the

the Child, but the Uterus along with it; of which an Inſtance is mentioned by *Valeriola*, of a Woman, who having forgot that ſhe had a Stone tied to her Thigh, the Uterus fell down without the Body, and ſhe died inſtantly. But I believe it more probable that the ignorant Midwife had by ill Management extracted and bruiſed that Part, and afterwards, to ſave her own Reputation, laid the Fault on the Eagle Stone. Many other Fables are told of this Stone, but they are too ridiculous to bear being mentioned.

CHAP. IV.

Of the Foſſile Bezoardic Stone.

THE Foſſile Bezoardick Stone of *De Laet*, Foſſil Bezoar Mineral of *Boccone*, Bezoar Mineral of *Beſlerus*, and Geodes of *Aldrovandus*, is a ſcaly Stone, of a white or aſh Colour, of various Thickneſs, and of an irregular Figure, ſomething roundiſh. It is made up of different Coats, caſed over each other, till they become of the Size of an Hazel Nut in ſome Stones, of a Walnut in others, and in ſome of a Gooſe Egg, and in the Centre of it is found ſometimes a little Gravel, ſometimes a ſmall Shell, and ſometimes a Bit of Pit-Coal. It is called Bezoar, from its Likeneſs to an animal Subſtance of that Name; or from the alexipharmack Virtues aſcribed to it; for *Bezahar* is an *Arabick* Word, ſignifying any Medicine poſſeſſed with the Virtue of expelling Poiſons.

This Stone is found in many Places; in *France*, near *Montpelier*; in *Sicily*; in *Italy*, near *Tivoli*; and in *New Spain*, in the River *Zhuatlau*; from whence, according to *Hernandes*, very large Stones are brought. The

Italians and *Sicilians* commend its Virtues very much againſt Poiſons, in putrid Fevers, the Small-pox, and Meaſles; in changing the acid Diſpoſition of the Blood, and calming its Effervescencies. It provokes Sweat and inſenſible Perſpiration; being given from twelve Grains to a Drachm, in any convenient Vehicle. Empiricks paſs theſe Stones upon the ignorant Vulgar for true Animal Bezoar; and indeed it is ſtill uncertain, whether the Occidental Bezoar be an animal or foſſil Subſtance.

CHAP. V.

Of Figured Stones.

ART. I. *Of the* Belemnites, *or* Lapis Lyncis.

BELEMNITES, Dactylus Idæus, Lapis Lyncis Officin. Lapis Lyncurius of ſome Authors, is a round oblong Stone, ending in an obtuſe Point, ſometimes of a white, ſometimes of a gold, and ſometimes of a dark Colour. Some of theſe Stones are ſolid, others hollow, and it is diſtinguiſhed by Lines drawn from the Axis to the Circumference. It is commonly about an Inch in Length and Thickneſs, though ſome have been found as large as a Man's Arm; and in every one of them there is a Fiſſure or Slit running through its whole Length. The Name, *Belemnites*, comes from a *Greek* Word, which ſignifies the Point of an Arrow; *Dactylus Idæus*, from its reſembling a Finger in Shape, and its being found in Mount *Ida* in the Iſland of *Crete*. But it is dug up likewiſe in the Alps, and many other Places of *France* and *Germany*. It is without Ground taken for the *Lapis Lyncurius* of the Antients, ſince it is evident that by that Word *Dioſcorides* underſtood

derſtood Amber, which he tells us was by ſome taken to be the concreted and indurated Urine of the *Lynx*. The *Germans* ſay, that this Stone is good againſt the Night-Mare, and the Stone in the Kidneys. It is given in Powder, from half a Drachm to a Drachm, in any convenient Liquor.

Art. II. *Of the* Lapis Judaicus.

THIS is an oblong, roundiſh Stone, of the Figure of an Olive, marked with Streaks and Furrows, running from the Baſis to the Apex, according to its Length, at equal Diſtances from each other. It is of a whitiſh or aſh Colour, and ſhining within. It parts obliquely into thin *Laminæ*, and is given in Powder to the quantity of a Drachm, in any proper Vehicle. It was called *Lapis Judaicus*, or *Syriacus*, from the Countries where it is found. By others it is named *Euroius*, as being of a diuretick Virtue; and *Tecolithos*, from its lithontriptick Virtue. This laſt Virtue I very much queſtion, but it is plain from Experience, that this Stone, the *Lapis Lyncis*, Crabs Eyes, and ſeveral other things ſaid to have a Power of diſſolving the Stone, are really diuretick. But it cannot be concluded, that, becauſe oftentimes Gravel comes away with the Urine, therefore they have any lithontriptick Quality; for the fixed earthy Parts of theſe Stones being mixed and incorporated with the Salts of the Fluids in the Body, become thereby more fixed, and more unfit to paſs off through the Pores of the Skin, but find their Way more eaſily through the Strainers of the Kidneys. Therefore the Secretion by inſenſible Perſpiration being leſſened, they are excreted in greater Quantities by Urine; and thereby whatever Saburra they find there, they waſh away; and hence the Urine becomes turbid, and is ſometimes mixed with Gravel, ſome Particles of which may be of a conſiderable

Sige, when the Paſſage is wide enough to tranſmit them. In this manner the diuretick Quality of theſe Stones may be accounted for; but neither Experience nor Reaſon give any Ground for attributing to them a lithontriptick Quality.

CHAP. VI.

Of ſome Stony Subſtances.

ART. I. *Of the Gloſſopetra.*

THE *Gloſſopetra* is commonly a triangular Stone, with a broad rough Baſis, but everywhere elſe ſmooth like Horn. It is marked on the Sides with Impreſſions in the Shape of ſmall Teeth, of a yellowiſh white Colour, and of different Magnitudes. It has the Name of *Gloſſopetra*, becauſe it has been thought to be a Serpent's Tongue petrified; but this muſt be a Miſtake, becauſe the Tongue of a Serpent is not triangular, but round and bifid; and beſides, it is now found that they owe their Original to the Teeth of the Sea-Dog, or ſome other Fiſh of that Kind. There is another ſmaller kind of *Gloſſopetra*, like the Tongue of a Magpie, which ſeems likewiſe to have been the Tooth of ſome Fiſh. It is thin, long, and ſharp, and of the ſame Colour with the larger kind, with which it is often found. Some attribute an alexipharmack Quality to theſe Stones, but with us they are only uſed by Women to hang about their Children's Necks, while they breed their Teeth.

ART. II.

ART. II. *Of the Foſſil Unicorn.*

THE Foſſil Unicorn, or *Lapis Ceratites* of *Geſner*, is a ſtony Subſtance, reſembling in Colour, Smoothneſs, and Shape, the Horns, Teeth, and Bones of Animals. It is made up of an Outer hard Part of a yellowiſh, blackiſh, or aſh Colour, and a ſoft, friable, compact Medullary Part, without Pores, of an aſtringent and drying Quality, ſticking very cloſe to the Tongue, and ſometimes of an agreeable Smell.

It is often dug up in the Form of Bones turned to Stone, among which we often find the *Dentes Molares*, and Inciſory, and we can perfectly diſtinguiſh between the Root of theſe Teeth, and that Part which appears without the Gums. Sometimes we meet with Fragments of the *Radius* and *Tibia*, repreſenting the natural Conformation of theſe Bones in a very perfect manner. There are likewiſe dug up large Branches and Trunks of Trees, in which the Species of Wood is ſtill diſtinguiſhable. There is therefore no room left to doubt, but that theſe ſtony Subſtances are really Petrifications of the Horns, Teeth, and Bones of Animals, or of Wood; which being putrified by remaining long under Ground, and in a manner calcined, their Subſtance becomes more rare and porous; as we ſee daily in rotten and worm-eaten Wood. By the Afflux of a fine Marl diſſolved in Water theſe porous Subſtances are filled, and the Water inſenſibly evaporating, the Remainder incorporates with the Bones or Pieces of Wood into a ſtony Subſtance, of the ſame Form and Figure with what they were before. But if theſe earthy Parts, which concrete with them, be of the Cryſtalline, or Flinty Kinds, then they turn to a Subſtance like Cryſtal or Flint, as we ſee in ſeveral Sorts of Foſſil Shells.

The

The Unicorn Foſſil is found in many Places of *Germany*; and at *Mont-Martyr*, near *Paris*, there were lately found many Bones hid in a ſtony Subſtance. The *Germans* eſteem it for its aſtringent, alexipharmack Qualities, and as a Provoker of Sweat; and, accordingly, often uſe it in Diarrhæas, Dyſenteries, Hæmorrhages, the Fluor Albus, Malignant and Peſtilential Fevers, and in the Epilepſy. The Doſe is from Ten Grains to a Drachm. But they do not uſe all Kinds of it indifferently, but chuſe that which has a pleaſant Smell, and which has been previouſly tried upon Dogs, or other Animals; becauſe it ſometimes contains a poiſonous Quality, eſpecially when dug out of the Earth, mixed with Arſenic; and therefore great Care is required about it.

CHAP. VII.

Of Opake Precious Stones.

ART. I. *Of the* Lapis Lazuli.

THIS is a hard blue Stone, with Gold or Silver coloured Specks and Veins, and it is found of two Kinds; one that can bear the Fire, the other that cannot. The firſt is brought from *Aſia*, and *Africa*, and is called the *Oriental* Stone; the other is found in ſome Places of *Germany* and *Italy*, being dug out of the Gold, Silver, and Copper Mines, and is ſofter than the Oriental. The Oriental produces the *Ultramarine* Blue, which never changes with Age. But the *German* Ultramarine is eaſily affected by external Cauſes, and in Time turns Green. The beſt *Lapis Lazuli* is of a deep blue Colour, marked with

with ſome Gold Specks, hard to break, and durable in the Fire.

It purges Upward and Downward, and is recommended by Authors in melancholy Affections, Quartan Agues, Apoplexies, Epilepſies, *&c.* They attribute to it a corroding Quality, with ſome Aſtringency; the firſt of which *Dioſcorides* and *Galen* ſay may be corrected by waſhing it in Water; but they are miſtaken; for, both waſhed and unwaſhed, it vomits and purges; and what the Water carries off from it differs from what remains only in the Fineneſs of the Parts. The blue Colour of this Stone ariſes undoubtedly from ſome Parts of Copper mixed with it, to which alſo its purgative Quality is owing; but it may very reaſonably be asked, why an acrid and purgative Medicine of this Kind, ſhould be uſed in the *Confectio Alkermes*, deſigned for a ſtrengthening Cordial? To anſwer this, it is to be conſidered that the ancient Phyſicians acknowledged two Virtues in this Stone, one purgative, the other ſtyptick; which, though contrary to each other, were nevertheleſs found in the ſame Subject. The ſtyptick Quality, by which it becomes a Strengthener, they counted natural to it, when it was found in Gold Mines, mixed with ſmall Particles of Gold; the cathartick Quality they conſidered as merely accidental, ariſing from the Mixture of heterogeneous Parts. Therefore, on account of the ſtrengthening Virtue of this Simple, they endeavoured, by various Ways, to correct the other, as by repeated Ablutions and Calcinations; but, whether they have ſucceeded or not, is with me ſtill a Doubt; tho' I muſt own, that long Experience has ſhewn, that no bad Accident ever happens from the *Confectio Alkermes*, rightly prepared. Whence it may be conjectured, that by Calcination the purgative Virtue of the Stone is very much leſſened, or entirely deſtroyed; but I cannot ſay that it contributes any thing to the cordial Virtues

of

of the Confection. The Ancients thought it purged off particularly the *Atra Bilis*, but, I am afraid, upon no good Grounds; for the black Colour of the Stools after taking it, is not ſo much owing to the Nature of the Fæces, as to the Tincture which all Steel and Copper Medicines communicate to them.

As there are many Medicines of more certain Efficacy among us, we ſeldom uſe the *Lapis Lazuli* in any thing but the *Confection* already mentioned; all the Magiſteries, Tinctures, and Elixirs, which the Chemiſts prepare from it, being laid aſide.

Art. II. *Of the* Armenian *Stone.*

THE *Armenian* Stone is opake with green, blue, or blackiſh Spots, ſmooth, and marked like the Azure Stone, with gold-coloured Specks, and friable. There is indeed but very little Difference between the two Stones, they being often found in the ſame Glebe, and uſed indifferently for each other, as having the ſame Virtues; only the *Armenian* Stone is more ſtrongly purgative. It is given from ſix Grains to a Scruple; and, externally uſed, it is detergent, with ſome degree of Acrimony and Stypticity. It is very ſeldom uſed in Phyſick, but the Painters employ it in making a beautiful blue Colour, with a greeniſh Caſt.

CHAP.

CHAP. VIII.

Of Gems, or Pellucid Precious Stones.

ART. I. *Of Cryſtal.*

ROCK Cryſtal is a ſoft, tranſparent Gem, reſembling Ice; and its Figure is that of an hexagonal Pillar, pointed at both Extremities; or it may be ſaid to be compounded of two Pyramids, with ſuch a Pillar between them. A ſecond Kind is found in *Iſeland*, and in ſome Parts of *France*, eſpecially about *Troyes* in *Champaigne*, which ſeems to be made up of Cryſtalline Plates, and fiſſil in the Direction of all its plain Surfaces; and when reduced to Powder, it ſtill retains a rhomboidal Figure, ſo that even the fineſt Powder viewed through a Microſcope, ſhows a Congeries of very ſmall rhomboidal Solids. Another Property of this Cryſtal is, that all Objects ſeen through it, appear double, which ariſes from a double Refraction of the Rays of Light. A third Species of Cryſtal is that mentioned by Dr. *Lyſter* in the *Philoſophical Tranſactions*, which is very ſmooth, pellucid, and gliſtering, coming near to a Diamond. Its Figure is ſpherical, oval, depreſſed, and ſometimes repreſenting an Hemiſphere, or Hemiſpheroide, and in others roundiſh and irregular. It is very hard, and has an exquiſite natural Poliſh, and is dug up in Pieces of different Sizes, in ſeveral Places of *England*.

Cryſtal is ſaid to have an aſtringent and lithontriptick Virtue, and hence is preſcribed by ſome in Looſeneſſes, the Fluor Albus, and in the Stone in the Kidnies or Bladder. What Judgment is to be made of the lithontriptick Virtue of theſe Stones, has been already ſaid; and ſome go even ſo far as

to

to imagine that they rather conduce to the Generation than the Diſſolution of *Calculi*.

Art. II.

Of other Tranſparent Precious Stones that have been commonly uſed in Phyſick.

1. AGATE is a precious Stone, reckoned commonly between the Opake and Tranſparent, of different Colours, and marked with Spots, or Specks; which are imagined to repreſent Trees, Fiſhes, and other Things. The fineſt come from the *Eaſt-Indies*, the common ſort from *Germany*, *Bohemia*, &c. Great Virtues have been attributed to this Stone, both cordial and alexipharmack; but they ſeem to be all imginary.

2. *Onyx*, or *Sardonyx* according to ſome, is different from the true *Sardus*. One Kind of it is opake, the other tranſparent, which is of the Colour of a Man's Nail, when the Blood appears in it, and from thence it has its Name. It is of an aſtringent Quality, and has been uſed inwardly; and alſo outwardly, for Ulcers in the Eyes.

3. *Sardus*, *Sarda*, or the *Sardian* Stone, is very rare, and not perfectly tranſparent. We meet with two Kinds of it, one called *Oriental*, the other *Occidental*, or *European*, the former of which is the hardeſt. Both theſe were by the Antients termed *Sardonyx*. The ſecond Kind is the *Indian* and *Arabian*, of which the former is pellucid, the other opake.

The *Indian Sardonyx* reſembled both the *Sardus* and *Onyx*, its Surface being like the *Onyx*, or Human Nail; but its Root was white, like the *Sardus*, or of a Fleſh Colour; and was moſtly tranſparent; though

though ſome of them, being opake, were from thence called *Cæcæ*, or *Blind*.

The *Arabick Sardonyx*, called by ſome *Memphitis*, was diſtinguiſhed by a black or dark blue *Subſtratum*, ſurrounded by a white Circle, and by its Surface being more or leſs white. This, by Jewellers, is termed ſimply *Onyx*.

The Antiens were of opinion that the *Sardus*, by a certain Irradiation, exhilarated the Mind, baniſhed Fear, inſpired with Courage, defended againſt the Power of Witchcraft and Poiſon. It is given in Powder to ſtop all Bloody Fluxes; but is very little uſed at this Time.

4. *Hyacinth*, ſo called from its Reſemblance to the Plant of that Name, in its yellowiſh red Colour; of which there being ſeveral Degrees, the different Kinds of it are taken from thence. Some are of the Colour of Red Lead, or Bilious Blood, ſome of Saffron, ſome of yellow Amber, which are the leaſt eſteemed. Hyacinths are diſtinguiſhed into *Oriental*, which are brought from the *Eaſt-Indies*, and *Occidental*, which come from *Sileſia*, *Bohemia*, *Auvergne* in *France*, and other Places. Theſe Hyacinths ſeem to be different from that mentioned by the Antients, eſpecially by *Pliny*, which was of a ſhining Violet Colour, like the Amethyſt, though not ſo ſtrong. Many ſuperſtitious Virtues have been aſcribed to this Stone. They ſaid it was of a cold Nature, that it ſtrengthens the Heart, is gently aſtringent, and procures Sleep. *Schroeder* reckons it a great Specifick againſt Spaſms and Contractions. It is an Ingredient in the *Electuarum de Gemmis*, together with the other precious Fragments, as they are called, and it gives its Name to the famous *Confectio de Hyacintho*.

5. *Sapphire*,

5. *Sapphire*, called by ſome the Gem of Gems, is a hard Stone of a blue Colour, like that of the clear Sky. It comes neareſt the Diamond in Splendor, Tranſparency, and Hardneſs, and is of two Kinds; one pale, called the Female Sapphire, the other of a deeper Blue, called the Male. There is a third Sort likewiſe, which has no Colour at all, and is ſometimes made to paſs for a Diamond, but is neither ſo hard nor ſo brilliant.

Sapphires are brought from different Parts of the *Eaſt Indies*, called from thence *Oriental*. The reſt are found in *Sileſia* and *Bohemia*, called *Occidental*. The Colour of Sapphire may be taken out by Fire, and then it looks liker a Diamond; for which Reaſon I believe this Colour to come from a ſmall Mixture of fine Sulphur of Copper. Many are the ineſtimable Qualities ſuperſtitiouſly aſcribed to this Stone; but, beſides theſe, we are told that it raiſes and exhilarates the Spirits, reſiſts Poiſon, and cures Ulcers of the Inteſtines.

6. *Emerald*, is a green diaphanous ſhining Gem, very pleaſant to the Sight, but exceſſively brittle, which has given Occaſion to many Stories. It is divided into *Oriental* and *Occidental*. The *Oriental* is the beſt in all reſpects; the other, which comes from *Peru*, is not near ſo bright, and beſides, has generally ſome foul Spots. There is a third Kind of Emerald, or *Pſeudo-ſmaragdus*, found in the Mountains of *Switzerland* and *Auvergne*, which is extremely tender, and of the paleſt Green.

Fragments of Emerald thrown upon a clear Fire emit a fine Flame, and totally loſe their Colour; which is Proof ſufficient that this Gem contains ſome Sulphur of Copper. Beſides the ſuperſtitious Uſes aſcribed to it, it is ſaid to ſtop Fluxes of all Kinds. It makes Part of the *Electuarium de Gemmis*, and

Confectio

Confectio de Hya intho, together with the other precious Fragments.

Authors are very much divided about the Virtues of theſe five Fragments, as they are called. Some Modern Writers reject as fictitious all that is found in the Ancients, not only about their ſuperſtitious, but medical Virtues, and are therefore of opinion that they ſhould be baniſhed the Shops. Others believe that they are not altogether without Efficacy, being in their opinion alcaline Abſorbents; but, if we conſider that their Colours are owing to ſome metallick Parts contained in them, we muſt be of opinion that they cannot be altogether deſtitute of ſome other Virtue, beſides that of being Abſorbents, and that theſe Virtues come from their metallick Parts. It may here be objected, that Gems are the hardeſt Bodies in Nature, and cannot be diſſolved even by *Aqua Regia*, and therefore muſt remain untouched in the Stomach, and paſs off as they entered. But this Objection is of no Force; for an Emerald thrown upon live Coals kindles like Brimſtone; and having loſt its green Colour by the Fire, remains ſtill tranſparent, and colourleſs, like Cryſtal. From hence we ſee that Gems conſiſt of two Parts; one Cryſtalline and Fixed, the other Sulphureous, or Metallick, and Volatile, which eaſily evaporates, the former remaining entire and unchanged; and what is here done by the Fire, may be done by the natural Heat of the Stomach, and the Action of the Juices thereof; that is, the cryſtalline Part remaining undiſſolved, the ſulphureous Part may be ſeparated from it, and, being mixed with the Fluids, act upon them according to its own Nature. If it be objected further, that this metallick Part is in too ſmall Quantity to be able to perform ſo wonderful Effects, as are aſcribed to them; I anſwer, that the Energy of a Medicine does not always depend on its

Bulk or Weight. A very ſmall quantity of Opium induces Sleep, and eaſes Pain. A very ſmall quantity of Antimony, in the Emetic Tartar, will cauſe violent and long-continued Vomiting. And how ſmall muſt that quantity of Matter be, in which the Poiſon of the Viper conſiſts, which however infects in a Moment almoſt, the whole Maſs of Blood, if once mixed with it through a Wound. We ought not therefore raſhly to baniſh all Gems from the Shop-Compoſitions, which have been long in Uſe, and conſequently long examined and approved of.

Art. III.

Of ſome Gems, never, or very ſeldom, uſed in Phyſick.

1. TOPAZ, or *Chryſolithos* of the Antients, is a pellucid Gem, of a ſhining Gold Colour, and of two different Kinds; the *Oriental*, which is very hard, and of the Colour of the pureſt Gold; and the *European*, which is ſoft like Cryſtal, and has a greater or leſs Mixture of Black in it. The Antients aſcribed a Solar Nature to this Stone, and therefore made it to baniſh Fear and Melancholy in the Night-time, to improve the Underſtanding, prevent troubleſome Dreams, and ſtop Hemorrhages. It is uſed only in the *Confectio de Hyacintho.*

2. *Cryſolithus*, or the *Topaz* of the Antients, and *Cryſopraſius* of ſome Writers, is a Gem of a green Colour, fainter than that of an Emerald, and with a ſmall Caſt of Yellow, the Rays of which paſſing through the Green, do ſometimes give the whole a red Colour. It yields to the File; and, though it has had the ſame Virtues attributed to it as the other *Topaz*, it is never uſed in Phyſick.

3. *Opal,*

3. *Opal*, is a beautiful Gem, of almoſt all Colours, according as the Rays of Light are refracted through it; it appears Blue, Purple, Green, Yellow, Red, Milky, and Black; and hence it has been by ſome called the Gem of Gems. The beſt Opals are found in *India*, the more ordinary Sort in *Cyprus*, *Egypt*, *Hungary*, and in ſome *Daniſh* Iſlands. They all grow in a ſoft Stone marked with black or dark Lines. It is ſaid to have the ſame Virtues with the reſt, but is never uſed in the Shops.

4. *Ruby*, is a pellucid ruddy Gem, a little inclining to Blue, and will not admit the File. On account of the Degrees of Splendor and Brightneſs found in it, it is uſually divided into four Kinds: The true Ruby, *Pyropus*, or Carbuncle, ſo called becauſe it is of the Colour of a lighted Coal: *Balaſius*, which has but a ſmall Degree of faint Redneſs: *Rubicellus*, not ſo pale as the former, but paler than the true Ruby: *Spinaleus*, which is ſofter and leſs ſhining than the true Ruby. The beſt are found in the Iſland of *Ceylon*; and very wonderful things are ſaid of the Virtues of this Stone, but they are all vain and ſuperſtitious.

5. *Diamond*, the hardeſt, moſt tranſparent, and moſt brilliant of all Gems. It is of the Colour of the cleareſt Water; but this Colour is ſometimes mixed with White, Yellow, or Black, which are reckoned Blemiſhes. Diamonds conſiſt of Cryſtal *Laminæ*, or *Strata*, laid upon each other; and the Joinings of theſe Tables may be diſcovered by skilful Lapidaries, and then they are eaſily ſeparated with the Edge of a Knife. Diamonds are not calcinable by Fire, nor changeable by the Sun's Rays, if the plain Surfaces of the Plates be expoſed to them; but the Edges, or Extremities, eaſily admit the Solar Fire, and then they are ſeparated as before, and afterwards

terwards melted into a Maſs of Glaſs, which retains nothing of the Splendor of the Diamond. They are found only in the *Eaſt Indies*, and in *Brazil*, but are not uſed in Phyſick.

6. *Amethyſt*, is a pellucid Gem, of a violet Colour, ariſing from a Mixture of Red and Blue, but not very vivid. It is found in many Places, but is not uſed in Phyſick. Chymiſts have endeavoured to extract Tinctures from theſe coloured Gems, but it is not certain whether ever they ſucceeded; or, if they did, what the Uſe of theſe Tinctures is.

SECT. IV.

Of SALTS.

BY *Salts*, I mean ſolid, friable, pellucid and ſapid Mineral Bodies, diſſoluble in Water, fuſible by Fire, and eaſily concreſcible in Form of Cryſtals. This Definition agrees to Alimentary Salt, Nitre, Vitriol, Allum, Sal Ammoniac, and Borax; of each of which in order.

CHAP. I.

Of Alimentary Salt.

ALimentary Salt, or that which is uſed in Food, is diſtinguiſhable from all other ſaline Bodies by the cubical Figure of its Cryſtals, which Figure it retains even in the leaſt Particles, which are the Objects of Senſe. It is of two Kinds; being either dug out

out of the Earth, from whence it is called Foſſil Salt, or Sal Gem: or prepared by evaporating the Sea-Water, being from thence termed Sea-Salt.

Art. I. *Of Foſſil Salt, or Sal Gem.*

THERE are ſeveral Kinds of this Foſſil Alimentary Salt, differing from each other only in their Colour; which is White, Grey, of a yellowiſh Red, or pellucid like Cryſtal; which laſt, moſt properly called Sal Gem, is preferred to all the reſt, as being judged muſt pure. It is of an octogonal, or cubical Figure, and ſalt Taſte, pellucid like a Gem, and often reſembles Cryſtal, both in Colour and Brightneſs. In the Mountains of *Catalonia*, near the City of *Cardona*, and alſo in deep Mines in *Poland*, near *Cracow*, huge Rocks of this Salt are found, and they beat them to Pieces with proper Inſtruments of Iron.

The Virtues of Sal Gem are the ſame with thoſe of Sea-ſalt, of which in the next Article. This Salt is uſed as a *Stimulus* in Clyſters and Suppoſitories given to ſoften and evacuate the indurated Fæces, in this or the like Manner:

Take of deſpumated Honey, two Ounces; Sal Gem, a Drachm and an half; boil them to a due Conſiſtence for a Suppoſitory. Or, *Take of Honey, boiled to a due Conſiſtence, an Ounce; Sal Gem, and Species of Hiera, of each half a Drachm; Diagridium, fourteen Grains: Mix and make into a Suppoſitory.*

Take of the Root of Spaniſh *Pellitory half an Ounce; Leaves of Marjoram and Rue, of each an Handful; Leaves of Senna, Agaric, and the Pulp of Coloquintida, of each two Drachms; boil in a ſufficient quantity of common Water to*

twelve Ounces, of ſtrained Liquor; in which diſſolve of Sal Gem two Drachms, and add of Emetic or Antimonial Wine, three Ounces, for a Clyſter in Apoplexies, and other ſleepy Diſeaſes.

In theſe Affections even the ſtrongeſt and moſt ſtimulating Clyſters are ſometimes of no Effect, becauſe the Inteſtines are become Paralytic; and they are never to be uſed in an Inflammation of the Inteſtines. The Chymical Preparations of Sal Gem are the ſame with thoſe of Sea-Salt. It is uſed in the *Benedicta Laxativa*, and *Pilulæ Polychreſtæ*.

ART. II. *Of Sea-Salt.*

THE artificial Sea-Salt is obtained by the Heat of the Sun, or by Coction, from Sea-Water, and ſalt Springs or Wells. In *Britany* in *France*, the Manner of making Sea-Salt is, to dig ſhallow broad Trenches, which they line with Clay. Theſe being filled with Sea-Water by the Tide, the Heat of the Sun evaporates the Water, and a large Proportion of Salt remains behind. In *Normandy*, they make ſmall Heaps of Sand on the Shore, which imbibe the Sea-Water, and the inſipid Humidity being afterwards evaporated by the Heat of the Sun, the Salt remains among the Sand. To ſeparate it, they firſt boil it in freſh Water, and then having ſtrained off the Lixivium, containing now only a Solution of Salt in freſh Water, they boil it again with a gentle Heat in Leaden Cauldrons, to a certain degree of Thickneſs; then putting out the Fire, the Salt cryſtalizes.

Salt is made from ſalt Fountains likewiſe, by boiling the Water till the Humidity exhales; and while it is boiling, they mix with it either Gall or Bullock's Blood, which makes the Salt form itſelf more eaſily into larger Lumps; for the Parts of the Gall

Gall or Blood inviſcate or entangle the bituminous or earthy Parts, which hinder the Concretion of the Salt, and are altogether thrown up as a Scum, or at leaſt remain in the Strainers.

Sea-Salt prepared by the Heat of the Sun, is preferable, both for culinary and officinal Uſes. The Taſte of it is very well known; the Colour is greyiſh, becauſe of the Particles of Earth mixed with it; but if it be diſſolved and cryſtallized by a gentle Heat, it is formed into very white cubical Grains. Salt made by Boiling is white, but the Grains thereof are not exactly cubical, becauſe of ſome Mixture of different Salts.

Before Sea-ſalt has felt the Fire, it changes neither the Syrup of Violets nor Tincture of *Heliotropium*, it makes no Efferveſcence with *Ol. Tartari per deliquium*, but diſcovers however ſome ſmall Signs of Acidity. It leſſens the Tranſparency of the urinous Spirit of *Sal. Ammoniac*, and darkens the Colour of the Infuſion of Galls. By other Trials it ſeems likewiſe to diſcover an alcaline Nature, for it turns a Solution of corroſive Sublimate white, and makes an hot Efferveſcence with Oil of Vitriol. A Solution of Salt in Water being evaporated to a Pellicle, and then ſet in a cold Place, the greateſt part of it will be formed into cubical Cryſtals; but the Remainder cannot be brought to concrete without Heat; and even then it is formed into no regular Figure, and ſoon runs *per deliquium* in the moiſt Air. Hence it is evident, that Sea-Salt is made up of an Acid of a peculiar Kind, and of a Mineral Alcali, and that the acid Portion is ſo far intangled and involved in the other, as hardly to be able to exert its proper Virtues in a concrete Form.

From Sea-Salt, by Diſtillation in a Retort, we obtain an acid Spirit, which turns the blue Tincture of *Heliotropium* into a purple Colour, and ferments vehemently with Oil of Tartar, but without any

ſenſible Heat; but does not raiſe any Effervescence with Lime Water. This acid Spirit is the only Diſſolvent of Gold and Tin, but cannot diſſolve Silver or Lead; and it communicates this Quality to Spirit of Nitre and of Vitriol; which, by being mixed with it, becomes *Aqua Regia*. If this Spirit, when very pure, be ſaturated with the alcaline Salt of Tartar, it concretes into a *Sal Salſus*, reſembling Sea-Salt in Taſte, and in the cubical Figure of its Cryſtals; whence it appears that Sea-Salt is an Acid perfectly ſaturated with an alcaline Salt. The Cryſtals of Sea-Salt crackle and crepitate in the Fire.

Its Virtues are to check too great Fermentation, and to reſiſt Putrefaction; and, for that Reaſon, it is uſed by Chymiſts in macerating Plants, to keep them from rotting; and what it does to Plants in macerating, is not different from its Effects on the Aliment in the Stomach; where it both checks too great Fermentation, and prevents Putrefaction. It likewiſe calms the too great Ebullition of the other Fluids of the Body; and, as it readily joins with volatile urinous Salts, and changes them into a *Sal Ammoniac*, it is fitted to ſoften the Acrimony of the Fluids, and promote the Depuration thereof by Urine. By its little Points, it likewiſe ſtimulates gently the ſolid Parts, and thereby increaſes their oſcillatory Motion, by which Means all the Functions of the Body are better performed. On theſe Foundations are built all the Virtues aſcribed to Sea-Salt, of drying, heating, deterging, digeſting, opening, attenuating, increaſing the Appetite, exciting to Venery, and of reſiſting Poiſons and Putrefaction.

It is ordered in an *Apepſia*, or want of Digeſtion, in want of Appetite, in Coſtiveneſs, and Obſtructions of Urine, and is an Ingredient in the *Unguentum Enulatum*. It is much eſteemed by the Chymiſts, as being the only Menſtruum for Gold, and they prepare from it the acid Spirit of Salt, already mentioned,

and

and the *Aqua Temperata* of *Baſil Valentine*, both uſed in Phyſick.

Before the Salt is diſtilled, ſome Preparations are neceſſary, and eſpecially Calcination or Decrepitation; for ſince the Grains of Salt fly and crackle in the Fire, they would burſt all the Veſſels uſed in the Diſtillation, except the watery Fluid, with which they abound, were firſt carried off by Calcination. This Decrepitation ariſes from the watry Fluid contained and encloſed between the Particles of the Salt, which being rarified by the Heat, burſt the Priſon wherein they were detained, ſeparating the Particles that ſurround them with a kind of Exploſion. The Decrepitation or Calcination of Salt is performed in this manner.

The Salt is ſet on lighted Charcoal, in an open Earthen Veſſel, and ſtirred conſtantly with an Iron Spatula. As ſoon as the Salt begins to be thoroughly heated, it makes a crackling Noiſe, which increaſes for ſome time, and then ceaſes altogether. When all the Noiſe is over, the Salt is decrepitated, calcined, dried, and burnt, and remains in the Veſſel in Form of a Powder. This decrepitated Salt ſerves for cementing Minerals or Metals, for the Diſtillation of Spirit of Salt, and for many other Chymical Operations.

Spirit of Salt is prepared thus:

Take of decrepitated Salt, one Part; of Potter's Clay, two Parts: Let them be powdered and well mixed, and then made into a Maſs with a ſmall quantity of Water. This Maſs is formed into little Balls, of the Size of an Hazel Nut, and they being dried with a gentle Heat, are put into a Retort, coated with a proper Lute, ſo as to fill it half full. The Retort is ſet in a Reverberatory Furnace, and a very

very large Receiver fitted to it; and the Fire is increaſed by Degrees till the Retort is heated red hot. The Spirit comes over in white Vapours, and when theſe ceaſe to ariſe, the Diſtillation is over. Then the Receiver is taken off, and the Spirit is poured into proper Veſſels, and there kept for Uſe. It may be rectified, if neceſſary, without the Addition of any other Subſtance, by only drawing off the inſipid Phlegm in a common Alembic in Balneo Mariæ, *till the Drops begin to be acid. The Spirit, now intenſely acid, remains at the Bottom of the Alembic, and is to be kept for Uſe. The Spirit of Salt may likewiſe be rectified by the Addition of Zuich or Calamine, which are firſt diſſolved in the Spirit, and then the Solution diſtilled with a Fire gradually increaſed. The inſide Phlegm comes over firſt, which is to be thrown away; then the concentrated, or rectified Spirit, aſcends free from all Mixture of Phlegm.*

Spirit of Salt is made by *Mixing it well with three times its quantity of Spirit of Wine, and then digeſting them together for ſeveral Weeks in a gentle Heat. The Mixture acquires a very fragrant Smell, and is in this Manner kept for Uſe. This is the* Aqua Temperata *of* Baſil Valentine.

Beſides the Chymical Uſes of this Spirit, in diſſolving Metals and drawing out their Tinctures; it is highly eſteemed among Phyſicians, for promoting the Secretion of Urine, preventing the Stone, curing Dropſies, allaying Thirſt in burning Fevers, and for conquering the Malignity of the Juices in the Scurvy. It is very properly given in Malignant Fevers, and in the Plague, either in the common Drink of the Patient, or mixed with as much Sugar as it can diſſolve, into a kind of Syrup. The edulcorated Spirit is preſcribed from three to twenty Drops, and

and the Syrup in the quantity of an Ounce, and thus it may be exhibited to diſſolve or expel the Stone:

Take ſimple Strawberry, or Burnet Water, of each three Ounces; of ſtrong White Wine, ſix Ounces; Oil of Sweet Almonds, two Ounces; Spirit of Salt, a Drachm: Mix for three Doſes, to be given every ſix Hours, as warm as they can be taken.

In Nephritic Pains, and Stones in the Kidneys,

Take ſimple Water of Pellitory of the Wall, and Burnet, of each three Ounces; Syrup of Violets, an Ounce; Spirit of Salt, fifteen or twenty Drops, or as much as will be ſufficient to give it a grateful Acidity.

To prevent the Stone, this Spirit is taken every Morning for ſeveral Days, either in Broth, or in ſome proper Apozem. In Dropſies, the dulcified Spirit, from fifteen to twenty Drops, or the acid Syrup already mentioned, are to be taken every Morning on an empty Stomach, in ſix Ounces of the Decoction of Juniper Berries.

We muſt not here omit the Uſe of the Spirit of Salt in curing Hernia's, which was a Secret purchaſed by the *Moſt Chriſtian King* for the Good of the Publick. The Spirit is mixed with Red Wine, in a Quantity ſuitable to the Age of the Patient, and thus drank for ſeven Mornings faſting; the Patient remaining for four or ſix Hours afterward without taking either Victuals or Drink; but if it ſhould happen not to agree with the Stomach, then it may be taken only every other Day. For a Child from two Years old to ſix, the Doſe is three or four Drops, in a ſpoonful or two of Red Wine: From ſix Years to ten, let a Drachm of the Spirit be mixed with a Pint of Wine, for ſeven Doſes. It is to be continued,

tinued, if neceſſary, for a Fortnight longer, in the ſame Manner. From ten to fourteen Years, the Quantity of the Spirit may be increaſed to two Drachms; from fourteen to eighteen, to two Drachms and an half; and after eighteen, to five Drachms. During four Months after this Courſe is begun, a Steel Truſs muſt be wore Night and Day, exactly fitted to the Rupture. The Patient ought never to ſit down, but either to ſtand or lie; and neither run, ride, or go in a Coach, taking great Care to commit no Error in Diet. Under the Truſs the following Plaiſter is applied to the Part, being firſt ſhaved:

Take of Maſtich, half an Ounce; Labdanum, three Drachms; Hypocyſtis, a Drachm; three dried Cyprus *Nuts; of ſealed Earth, a Drachm; Black Pitch, three Ounces;* Venice *Turpentine, a Drachm; yellow Wax, an Ounce; dry Comfrey Root, half an Ounce. Make into a Plaiſter according to Art.*

Many Phyſicians are afraid to uſe Acids, being of opinion that almoſt all Diſeaſes ariſe from an acid Cauſe. But it is eaſily proved, that this Acid is deſtroyed in the Blood; for all animal Fluids, except Milk, contain Salts which come neareſt to an alcaline Nature. This appears not only from their Analyſis, by which no Acid, but a large quantity of alcaline Salt, is obtained; but alſo from their urinous Smell, while in a State of Fermentation or Putrefaction, and from the green Colour which they give to the Syrup of Violets. If Dr. *Colebatche*'s Experiments may be relied on, by comparing the Blood in an healthful and morbid State, it appeared by Chymical Analyſis, that the Proportion of Alcali in the morbid Blood was to that in ſound Blood, as ſix to four. And to carry this Enquiry a little further; if an Acid can diſcover itſelf in any Diſeaſe, it would certainly be in Ulcers in the Lungs; and yet the purulent Matter

of

of theſe Ulcers diſcovers no Sign of Acidity, for it does not turn the Tincture of *Heliotropium* red, but, on the contrary, diſcovers manifeſt Signs of a ſtrong Alcali, by turning the Syrup of Violets green. The Serum taken from dropſical Perſons, the purulent Matter of Abſceſſes, and the chalky Subſtance found in the Joints of gouty Perſons, produce the ſame Effects. If it be objected, that alcaline Salts have not Force enough to produce all thoſe racking Pains, which venereal Patients, for Inſtance, are affected with, or that Eroſion of the Parts found in the Scurvy, and other Effects of that Kind: I anſwer, that the Chymiſts every Day prepare Lixivial Liquors, which have as great a corroſive Power as the moſt powerful Acids. Cauteries, for inſtance, are nothing but alcaline Salts exalted to a great Degree of Cauſticity. From all which it is evident, that many Diſeaſes ariſe more from an alcaline than from an acid Cauſe, eſpecially thoſe of the malignant and peſtilential Kind; in which the Blood ſeems to be ſo far diſſolved by an alcaline Salt, that it cannot be any longer contained in the Veſſels, but breaks through them, and afterwards ſtagnating produces red Spots or Puſtules; or, it ſeems to be ſo acid and cauſtick, as to corrode the Extremities of the Veſſels, and thus bring on fatal Hemorrhages. The Practice of both ancient and modern Phyſicians is agreeable to this Hypotheſis; for in many ſevere Diſeaſes they recommend Acids as the moſt powerful Remedies, and attribute to theſe Salts a cordial Virtue, a Power of reſiſting Putrefaction and Poiſons, of curing Fevers, quenching Thirſt, raiſing the Appetite, of cooling, reſolving, and diſcuſſing.

Acid Salts do both reſolve and coagulate, but in different reſpects: They reſolve tartarous Concretions, and grumous Blood, by ſubduing the alcaline Salts to which theſe Concretions are owing, and by ſtimulating the ſolid Fibres, they increaſe their Oſcillations,

lations, and conſequently their Action on the ſtagnating coagulated Blood; which, being thus attenuated, is made to circulate more eaſily through the ſmall Veſſels. They coagulate the Blood when too thin, and the Bile when too much rarified, by inſpiſſating the too exalted Sulphurs, and fixing the volatile Salts.

The moſt skilful Phyſicians never forget to give Acids in bilious, putrid, and peſtilential Fevers, and in ſcorbutick Affections; but, as vegetable Acids are very weak, and eaſily conquered by the more acrid alcaline Salts, and turned to the ſame Nature with theſe, mineral Acids are to be preferred, as more powerfully reſiſting Fermentation. However, we muſt not forget *Riverius*'s Caution, that in Peripneumonies, ſpitting of Blood, Phthiſis, and other Affections of the Lungs, (except thoſe that proceed from a thick pituitous Phlegm obſtructing their Veſſels) in Inflammations of the Stomach, Inteſtines, and Liver, in bloody Urine, and Ulcers of the Kidneys and Bladder, Acids are not to be meddled with; becauſe they irritate the inflamed Membranes by their ſharp *Spicula*, and thus increaſe the Inflammation, and bring on violent Coughs, Cholicks, and other diſmal Symptoms.

CHAP. II.

Of the Nitre, or Natrum, *of the Ancients; and the modern Nitre, or Salt-Petre.*

THERE is a very great Difference between the Nitre, or *Natrum*, of the Antients, and our Salt-petre; which we do not know whether the Antients were acquainted with or not; and, in like manner, their Nitre is almoſt unknown to us.

By

By Nitre, the Antients understood an acrid alcaline Salt, found in *Egypt* and other Places, which, as it made an Effervescence with Acids, was used as a lixivial Salt, for cleansing Cloaths and for making Glass. *Solomon* mentions the Effervescence of Nitre with Vinegar, *Prov.* xxv. 20. where he compares a Man that sings Songs with an heavy or afflicted Heart to a Mixture of Vinegar and Nitre; which Antipathy, or Contrariety, cannot be understood of the common Nitre, or Salt-petre, which raises no Effervescence with Vinegar. The Ancients frequently used their Nitre, or *Aphronitrum*, in Baths, and the Women in their Washes; whence *Jeremiah* says, chap. ii. ver. 22. *Though thou washest thee with Nitre, and takest thee much Soap, yet thine Iniquity is marked before me, saith the* LORD GOD. This cannot be said of Salt-petre, but of the Lixivium of that alcaline Salt, which was brought from *Egypt* by the Name of *Nitrum*, or *Aphronitrum*.

This Nitre easily relented in the Air, fermented with Vinegar, and had an abstersive Quality; and even at this Time, in the Fields of *Lesser Asia*, near *Smyrna* and *Ephesus*, the Earth rises in small Hillocks placed very near each other, like Molehills, during the Spring and Autumn, of which the Inhabitants prepare a Ley for washing Cloaths; as also of the Salt they get from that Earth, by dissolving it in Water, they make Soap; as is related by the great *Tournefort*. This antient Nitre was likewise used to make Glass, being mixed with Sand; as they afterwards did with the Salt of the Plant Kali, or Glass-Wort, as may be gathered from what *Tacitus* says, Hist. l. 5. that the Sands of *Palestine* and *Syria*, near *Egypt*, were made into Glass with Nitre.

It is evident therefore, that the Nitre of the Antients was quite different from ours. At this Time it is very little used and very rare in *Europe*, though it was very much in Use among the Antients, both for

for making of Medicines, and for other Purpoſes of Life. The common Cuſtom of Bathing alone conſumed a vaſt quantity of it. It ſerved likewiſe for Dyeing, for ſeaſoning Victuals, and for glaſing earthen Veſſels. Very little of it is brought us, and it is very hard to determine the Difference between the *Aphronitrum*, or the *African or Egyptian* Nitre, or *Spuma Nitri*, which I believe to be the *Baurach* of the *Arabians*, and the *Grecian* Nitre. Nitre was a native Salt, of a red or white Colour, and bitter Taſte. It did not fly in the Fire like common Salt, nor flaſh like Salt-petre, but melted and roſe in Bubbles, like Allum and Borax. It made an Effervescence with Acids; and hence I look upon it to have been of the ſame Nature with Salt of Tartar, or Pot-Aſh.

The Nitre of the Moderns, or Salt-petre, is a white cryſtalline Subſtance, of an acrid bitter Taſte, with a certain Senſation of Cold, which concretes into long, ſmall, and equally thick Priſmatic Cryſtals, of ſix Sides, the outermoſt of which end in Points like Pyramids. It is eaſily ſoluble in Water, and melts by Fire without Deflagration; and, if it be mixed with Brimſtone or Charcoal, it detonates. Salt-petre appears ſometimes in ſpontaneous Efflorescences on old Walls not much expoſed to Rain, which may be called the Flower of Nitre, and is gathered only by ſweeping it together with Brooms. It is likewiſe obtained from the Ruins of old Stables or Vaults, or from Earth that has imbibed the Urine or Fœces of Animals, by boiling them in Water; and may be made artificially, by mixing Earth with the Soil of Houſes of Office, or with Pigeons Dung, the Salts of which are thus ſoon changed into Salt-petre. Since no Salt-petre is obtainable except from Earths impregnated with the urinous Salts of Animals or Vegetables, it is doubted by ſome whether this Salt be of a Mineral or Animal

mal Original. This we leave to be determined by others, but we chuſe to follow the Example of the Generality of Chemiſts, in ranking it among Minerals, becauſe it is extracted immediately from the Earth, and cannot be obtained from the Urine and Fæces of Animals without Earth. The Manner of preparing it is this:

When it appears by the Taſte that the Earth contains a large quantity of it, they diſſolve and dilute it with a great quantity of Water; and having then ſtrained off the Solution impregnated with Nitre, they boil it to a due Conſiſtence, continually taking off the Scum that ariſes. Then they pour the Liquor, while warm, into Veſſels, and leave it there for ſome Hours, till it is perfectly cold. In the mean time the Sea-Salt, of which there is always ſome quantity found in Nitre, concretes into little Grains, and falls to the Bottom. Then they pour off the nitrous Liquor, leaving the Sea-Salt behind, and ſet it in a cold Cellar, to let it cryſtalize. When theſe firſt Cryſtals are taken off, they boil the remaining Liquor again, till it becomes thicker and more acrid, and then expoſe it to the Cold, in the ſame manner as before, to form new Cryſtals. By continuing this Proceſs, an acrid, bitter Water at lengh remains, fat to the Touch, like Oil, which never concretes by Cold, and is called Eau mere de Nitre, *The Mother-Water of Nitre; becauſe being ſprinkled upon the Earth, it diſpoſes it towards the Generation of more Nitre. All the Cryſtals, by being diſſolved in freſh Water, become purer; and this may be repeated two or three times. Sometimes theſe very pure Cryſtals are melted by a ſtrong Fire, and all the Humidity being exhaled, they are ſuffered to concrete into a hard ſolid Maſs, called commonly Rock-Nitre.*

Pure Salt-petre melts in the Fire without Noiſe, but detonates ſtrongly with Charcoal, and gives a vivid, not a faint Flame, leaving very little fixed Salt behind upon the Coals; but when Nitre crakles in the Fire, it is mixed with Sea-Salt.

Salt-petre, well purified, is diſtinguiſhed from the other Salts, 1. by Detonation, or Deflagration, which happens when it is thrown on lighted Charcoal; for it never deflagrates, except a ſulphureous Matter be joined to it. 2. By the Taſte; for it affects the Tongue with a Senſe of Cold and Bitterneſs together. 3. By the hexagonal priſmatic Figure of its Cryſtals. Before it has been expoſed to the Fire, it gives no Signs of Acidity; for it neither changes the Tincture of *Heliotropium*, nor Syrup of Violets. It does not curdle Milk, but it coagulates Blood a little, and thickens the Serum, and turns the Solution of corroſive Sublimate to the Colour of Milk, in about a quarter of an Hour. Like alcaline Salts, it likewiſe renders an Infuſion of Galls turbid, and turns it to a white or aſh Colour; and yet, which is very ſurprizing, it yields an acid Liquor by the Force of Fire, which turns the Tincture of *Heliotropium* and Syrup of Violets red like Fire, coagulates Milk in an Inſtant, and makes a great Efferveſcence with *Ol. Tartari per deliquium*, without any perceivable Heat. It likewiſe raiſes an Efferveſcence with Spirit of Sal Ammoniac, and generates Heat. This Liquor is the only Diſſolvent of Silver, whence it is termed *Aqua Fortis*; and it communicates the ſame Quality to Oil of Vitriol and Oil of Sulphur, which of themſelves are unable to make any Impreſſion on Silver, but it leaves Gold untouched, *Aqua Regia* being the only Diſſolvent thereof.

Salt-petre is eſteemed by the beſt Phyſicians to have a refrigerating Quality, and to calm the Heat and Ebullition of the Blood, and is therefore recommended for allaying febrile Efferveſcences, quenching Thirſt,

Thirſt, and preventing Putrefaction in malignant Fevers. *Riverius* ſays that it has likewiſe a diaphoretick Virtue; and many have aſcribed to it an anodyne Quality, and from thence have termed it the Mineral Anodyne. On the other hand, ſome have, without Ground, ſuſpected it of a fiery and cauſtick Quality; for which they have had no other Foundation but the Authority of the Antients, who called their Nitre Cauſtick, and the Deflagration of our Nitre with Charcoal. To correct this imaginary igneous Quality, they order it to be burnt with Brimſtone, or ſome ſuch Subſtance. But, in the firſt place, all theſe Operations have proceeded from a Miſtake; and, in the next place, theſe Concretions rather deſtroy than improve the natural Qualities of Nitre; and, accordingly, the beſt Chemiſts agree that Saltpetre well purified and cryſtallized, or melted, and formed into little Tablets, by the Name of Cryſtal Mineral, is to be preferred to all the other Preparations of it. It is given inwardly, in Subſtance from three Grains to twenty, three or four times a Day; or it may be diſſolved in our common Drink, in the quantity of half a Drachm, or a Drachm, to a Quart. If it be taken in a greater Proportion, as that of an Ounce to a Quart, it will be apt to bring on a Looſeneſs. It is ordered in burning and putrid Fevers, in Pleuriſies, Peripneumonies, Quinſies, and all other Inflammations; in Suppreſſions of Urine, in Inflammations of the Kidnies and Bladder, in a Suppreſſion of the Lochia, in Hæmorrhages, ſpitting of Blood, gouty Pains, and in Caſes of Melancholy; and we need not be afraid of bringing on unſeaſonable Diarrhœas in acute Diſeaſes by the uſe of Nitre, as is well obſerved by that excellent Phyſician and Chemiſt M. *Stahl*, now firſt Phyſician to the King of *Pruſſia*, in his *Diſſertation on the Medical Uſe of Nitre*, where he tells us, that he has often given it with Succeſs in Diarrhœa's brought on

in the time of malignant Fevers, or of the Small-Pox; for as ſuch Diarrhœas are always ſymptomatical, proceeding from two great a Colliquation of the Blood, Salt-petre, by gently coagulating the Blood, not only cures the Diarrhœa, but often allays other greater Symptoms, and, with the Aſſiſtance of proper Medicines, quite carries them off. It is true that Nitre does ſometimes bring on a Diarrhœa, but then it is always advantageous for the Patient. In an Inflammation of the Inteſtines, for Inſtance, Nitre will bring on a Flux; but then, as the Author obſerves, this does not happen till the Inflammation is gone; for then the noxious Juices, with which the Glands were replete, break through their Priſons, and force their way, through the Inteſtines, out of the Body. He obſerves likewiſe, that Nitre is uſed with great Succeſs in Suppreſſion or Heat of Urine, and in all inflammatory eryſipelatous Pains. In Caſes of a Fever following a Suppreſſion of the Lochia, he ſays that by the Uſe of Nitre he has often found the Fever to be immediately calmed, and the orderly Flux of the Lochia to return. He uſed Nitre likewiſe as a Lenient in *Paroxyſms* of the Gout, which not only eaſe the Joints, but the Diaphragm likewiſe, thereby endangering the Patient very much; in the Hypochondriacal Heartburn, or that flatulent ſpaſmodic Affection, which ariſes from too great an Afflux of Blood to the Orifice of the Stomach, or a ſlight Inflammation of that Part; and, laſtly, in Hæmorrhages and ſpitting of Blood.

Though this great Phyſician is of opinion that no bad Conſequences are to be feared from the internal Uſe of Nitre, yet in ulcerous Affections, and in Phthiſes, ſince it is found to do no Service in theſe Complaints, but may be thought to cauſe a greater Irritation, he thinks it ought not to be uſed.

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In Inflammatory and Malignant Fevers, Nitre may be ordered in this manner:

Take of the Diaphoretick Mineral, two Drachms; prepared red Coral, and Mother of Pearl, of each half a Drachm; purified Nitre, a Drachm: Mix into a Powder, of which let a Drachm be taken every three Hours, in a Draught of Carduus Water.

Take of Bezoar Mineral, two Drachms; purified Nitre, two Drachms; Camphire, one Drachm; Syrup of Cloves, or of Citron Peel, a ſufficient quantity to make them into an Electuary, of which a Drachm is a Doſe.

Take the ſimple Water of Balm and Carduus Benedictus, of each three Ounces; Cryſtal Mineral, a Drachm; Syrup of Lemons, an Ounce: Mix them together, and make a Julep, to be taken by Spoonfuls.

Salt-petre is ſeldom uſed externally, except in Gargles, for Roughneſs, Dryneſs, or Blackneſs, of the Tongue; and ſuch Gargles may be thus made:

Take of pure Nitre, a Drachm; Houſeleek Juice, or Water, five Ounces: Mix them together, and make a Gargle for the Tongue or Fauces. Or,

Take of freſh Butter, waſhed in common Night-Shade Water, two Ounces; Cryſtal Mineral, half a Drachm: Mix them, and keep the Mixture in cold Water, to be taken in the quantity of a Pea or Bean, often in the Day, holding it long in the Mouth.

In Quinſys, Gargles may be made of Sal Prunel, or purified Nitre, in theſe Forms:

Take Barley-Water, mixed with Agrimony, six Ounces; Sal Prunel, a Drachm; Syrup of Mulberries, an Ounce: Dissolve and make a Gargle.
Or,
Take Plantane, Nightshade, and Honeysuckle Water, of each two Ounces; Honey of Roses, and Sal Prunel, of each a Drachm: Mix, and make a Gargle.

Crystal Mineral was formerly very much used in laxative Apozems and Decoctions; but it is now seldom ordered in such Intentions, except there be a Necessity of Purging when the Fluids are violently heated; for the Tinctures of Purging Medicines are much better extracted by Salt of Tartar, or fixed Nitre, and their Purgative Quality is much more increased by vitriolated Tartar, or the *Arcanum Duplicatum*, than by purified Nitre, or Crystal Mineral.

Some Physicians cry up pure Nitre, as a Specifick in Dropsies; and it has been for some time a mighty Arcanum among some Monks to mix it with a quarter Part of *Crocus Martis*, and to give sixteen Grains four times a Day; and besides to dissolve a Drachm in a Quart of the Patient's common Drink, to be drank in a Day's time; and it must be owned that this Method has often succeeded.

Salt-petre has always been much used by Chemists, and called by various enigmatical Names; such as *the Sulphurous Salt*, *the Infernal Salt*, *the Chemical Cerberus*, and *the Earthy Serpent*.

There are a great many Preparations of Nitre; such as, first, the Purification or Purgation of it, by which it is freed from the Sea-Salt, and a sort of fatty Matter contained in it. This is done by repeated Solutions and Crystallizations, in the Manner already mentioned. Secondly, Fusion, by which the Crystal Mineral, called by some *Lapis Prunellæ*, is prepared. Some mix a certain quantity of Sulphur with the

the Nitre, while melting in the Crucible; but by this they deſtroy the refrigerating Quality of the Medicine, and bring it to a ſort of *Sal Polychreſtus*. The third Preparation is Calcination with Sulphur, in this manner:

Take pure Nitre and common Sulphur, of each equal Parts; reduce them to a fine Powder, and paſs them through a Searce. Then throw them gradually in ſmall Quantities into a red-hot Crucible, and when the Deflagration is over, let the remaining Maſs be calcin'd by a very ſtrong Fire, for an Hour; then diſſolve it in hot Water, and filtre it through Cap Paper, and evaporate it to Dryneſs; the Salt that remains will be very white, and of the ſame Virtues with the vitriolated Nitre, of which hereafter. It is named Sal Polychreſtus.

Fourthly, Nitre is likewiſe calcined in a Crucible ſet in the middle of burning Coals; and when it is in perfect Fuſion ſome Charcoal Duſt is thrown in by Degrees, which cauſes a great Deflagration and Noiſe. When all that is over, throw in more Duſt, and repeat it till the Nitre ceaſes to flame, and remains a dry, greeniſh, hard Maſs. This is what is called Fixed Nitre, or Nitre turned to an alcaline Salt, which, by Solution and Filtring may be purified, and turned to a dry white Salt, of the ſame Virtues with Salt of Tartar; and by diſſolving it *per ſe* we obtain the Liquor of Fixed Nitre, which is the Alcaheſt or natural Menſtruum of *Glauber*, and is much celebrated among Chemiſts for the extracting Tinctures from the ſulphureous mixed Bodies of all the three Kingdoms. Fifthly, by Diſtillation an acid Spirit is drawn from Nitre, in different Manners:

Take of pure dry Nitre, one Part; of Bole, or dry Clay, three Parts; powder and mix them very

well, and distil them according to Art in an Earthen Retort, in a Reverberatory Furnace, applying a very large Glass Receiver. The Spirit of Nitre will come over in red Fumes, called by Chemists the Blood of the Salamander. This yellow fuming Spirit is to be kept for Use without any farther Rectification.

Another Way is to *Take pure Nitre, one Part; Vitriol calcined to Yellowness, two Parts; and to distil them according to Art, till the Fumes change from a red to a dark Colour. This Spirit is to be kept for Use by the Name of* Aqua Fortis, *or* Aqua Separatoria, *which last Name has been given it because it dissolves Silver, and separates it from Gold. It borrows nothing from the Vitriol, and differs in nothing from the Spirit made with Bole.*

A third Way is to *Take of pure dry Nitre, two Pounds; rectified Oil of Vitriol, one Pound; let them be distilled to Dryness, and a very strong Spirit of Nitre will be obtained; a saline Mass remaining at Bottom, called Vitriolated Nitre, being the same that is got by Lixiviation from the* Caput Mortuum *of Aqua Fortis.*

Both these Salts are celebrated among the Chemists by the Names of *Arcanum Duplicatum*, the Duke of *Holstein*'s Salt, *Panacea Duplicata*, and *Sal ex duobus*; but they do not seem to differ from the *Sal Polychrestus*, or vitriolated Tartar, and, when rightly prepared, they may all be used indifferently. They are very fitly mixed with Purgatives, to increase their Virtue, and to attenuate the Humours. They operate both by Urine and Stool, given in the quantity of half a Drachm, or a Drachm. They are often ordered to be mixed with cathartick Potions, or alte-

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rative Apozems, and an artificial Mineral Water made of them is very beneficial in Chronical Diſeaſes ariſing from an Obſtruction of the Viſcera.

It is to be obſerved, however, that vitriolated Nitre, and *Sal Polychreſtus*, except they be very well calcined, excite a Nauſea and Vomiting; and therefore, if they are perceived to retain any Taſte of Vitriol or Sulphur they muſt be calcined afreſh.

Aqua Regia is prepared from Spirit of Nitre, by diſſolving in it a fourth Part of its Weight of Sal Ammoniac; and then it no longer diſſolves Silver, but Gold only, and therefore has the Name of *Lavacrum Minerale Solis.* Spirit of Nitre is ſeldom given inwardly, and it ought always to be firſt mitigated or dulcified with Spirit of Wine, in the following Manner:

Take of pure Spirit of Nitre, one Part; rectified Spirit of Wine three Parts; digeſt them together for ſeveral Weeks, and the dulcified Spirit thus obtained has the ſame Virtues with dulcified Spirit of Sea-Salt.

It calms febrile Effervеſcences in malignant Diſtempers; and in flatulent Cholicks it is preferred to all the other acid Spirits, and for that Reaſon is by ſome called the Carminative, or Anti-Colick Spirit. Every body knows that Gunpowder is made with Nitre, Sulphur, and Charcoal; and the *Pulvis Fulminans* with Nitre, Sulphur, and Salt of Tartar. But theſe are ſeldom or never uſed in Phyſick.

CHAP.

CHAP. III.

Of Vitriol.

SOME derive the Name *Vitriol* from *Vitrum*, becauſe it has the Colour and Tranſparency of Glaſs; in *Greek* it is named χαλκανθος, as if it were an Efflorescence of Braſs, and in *Latin Atramentum Sutorium*, becauſe it is uſed in blacking Leather. Vitriol is either Natural or Factitious. The Former is found in Cryſtals, or *Striæ*, ſticking to the Roofs of Mines; and the Latter is made by boiling the vitriolick Veins of ſome mineral Oars in Water, and afterwards letting them ſtand in the Cold to cryſtallize; or by corrupting and fermenting the *Pyrites*, or *Marcaſite*, and then mixing it with Water, from which Vitriol is afterwards obtained by Coction and Cryſtallization. This Way of making Vitriol ſeems to have been unknown to the *Greeks*.

White Vitriol is brought from *Germany*, made up in Loaves like Sugar, and is of a ſweetiſh aſtringent Taſte. They are miſtaken, who think that White Vitriol of *Goſlar* is only the Green calcined by the greateſt degree of Fire; for it is found in proper Mines, like a downy Efflorescence, which being diſſolved in Water, to a due Conſiſtence, is afterwards boiled till it concretes into a white Maſs like Sugar. Sometimes little Pieces of it are found in the ſame Mines, tranſparent like Cryſtal. This Vitriol contains an imperfect Iron Oar, or, perhaps, an Iron Oar mixed with Calamine, or Lead. Blue Vitriol is dry to the Touch, and concreted into blue Cryſtals, like *Sapphires*, of a rhomboidal Figure, flattened, and conſiſting of ten Sides. It is brought from ſeveral Places, eſpecially from *Hungary* and *Cyprus*, and its beautiful blue Colour is owing to the Copper which

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it contains. The Taſte of it is very acrid and auſtere. Green Vitriol has different Names from the different Places where it is found; as *Roman*, *Swediſh*, *Engliſh*, *French*, &c. It contains a large Portion of Iron, from whence its green Colour is derived. It is kept in the Shops either in large rhomboidal Cryſtals, or in Heaps of ſmall cryſtal Grains, ſometimes a little unctuous, and ſticking to the Hands. It is of an acid ſtyptick Taſte; and indeed it cannot well be ſuppoſed to have any other, Vitriol being an acrid Salt, which having corroded Iron or Braſs, coagulates with them, and concretes into a pellucid Maſs, either of a green or blue Colour, according to the Metal which it has diſſolved. Some Authors mention likewiſe Red Vitriol, but I have not hitherto been able to learn what it is.

Vitriol is obtained by various Arts, from Waters, Earths, vitriolick Stones, and eſpecially from the *Pyrites*. In *Galen*'s Time, blue Vitriol was made in *Cyprus* by the Heat of the Sun exhaling the Humidity of a vitriolick Water. In ſome Places of *Hungary* the ſame Vitriol is now made by boiling and evaporating a Water of the ſame Kind; and the green Vitriol is made by a Method not much different, in other Places of *Germany*. In ſome Places it is made by frequent Ablutions of an aſh-coloured Earth marked with Spots of different Colours, ſome of which look like the Ruſt of Iron, others like Verdegreaſe, with a ſtrong ſulphureous Smell, and an unpleaſant acerb Taſte. This Vitriol is therefore compoſed of a Mixture of Iron and Copper, and accordingly its Colour is a Mixture of Blue and Green. In *England*, at the Diſtance of about a League from *London*, green Vitriol is made from the *Pyrites*, which are heavy, denſe Stones, of a dark Colour on the Outſide, but their inner Surface is radiated from the Centre to the Circumference, the Rays ſhining like Bath Metal. They are perfectly inſipid

inſipid to the Taſte, and by being expoſed to the open Air for a ſufficient Length of Time, they acquire an inward kind of Fermentation, and ſpontaneouſly fall to Pieces. In the Cracks or Openings, we obſerve a certain ſort of white ſaline downy Efloreſcence, of an acid ſtyptick Taſte. Afterward the whole Subſtance of the Stone is diſſolved, and falls into a fine Powder of a ſaline and vitriolick Taſte, and ſulphureous Smell. If freſh *Pyrites* be burned and calcined in the Fire, the Fumes which they emit ſmell like Brimſtone, and a red Calx remains, which contains ſome Iron and Copper. The way of extracting Vitriol from the *Pyrites* is this:

The entire Stones are ſpread abroad in a large Area, to the Height of about three Feet; and there they lie expoſed to the Air for three Years, being turned once in ſix Months, that the Rays of the Sun may calcine them the better, and the Rains penetrate them more eaſily. By this Means they are reduced to a vitriolick Earth, which being well waſhed with Rain-Water, the Liquor is afterwards conveyed by Pipes into Ciſterns. Then they boil it to a due Conſiſtence in large leaden Veſſels, throwing in a Quantity of old Iron, which is preſently conſumed by the Lixivium. Afterwards the Liquor is ſet to cool in other leaden Veſſels, with Sticks fixed a-croſs, about which the Vitriol cryſtallizes.

The *Pyrites* of *Sweden* and *Leige* are very full of Sulphur, and the Way of preparing Vitriol from them ſhall be related in ſpeaking of that Mineral. Sulphur is obtained from theſe *Pyrites*, *per Deſcenſum*, and then the ramaining Maſs is calcined, and afterwards made into a *Lixivium*; which being ſtrained, is boiled in leaden Veſſels, and then ſet to cryſtallize, as before, in a cold Place.

A Solution of Vitriol turns the Tincture of Heliotropium into a faint Purple Colour, coagulates Milk,

Milk, turns Syrup of Violets to a greeniſh Colour, but does not change a Solution of corroſive Sublimate. When it is mixed with a Solution of Salt of Tartar, or Lime-Water, the Colour becomes a little yellowiſh, and it communicates a black or dark purple Tincture to the Infuſion of Galls, which indeed is peculiar to Vitriol.

By Diſtillation an acid Spirit is obtained from Vitriol by a very great degree of Fire, called by the Name of the Spirit or Oil of Vitriol, which turns the Tincture of *Heliotropium* and Syrup of Violets to the Colour of Fire, coagulates Milk and Blood, and raiſes a ſtrong Fermentation and Heat with any alcaline Salt. The Oil of Vitriol, or that ſtrong acid Liquor obtained from it by Diſtillation, when mixed with common Water, raiſes an intenſe Heat; with Sal Ammoniac it raiſes an Effervescence, but generates Cold, though the Fumes that ariſe feel hot.

After this Diſtillation is over, a blackiſh or red Earth remains in the Retort, called *Colcothar*, and it is the Calx or Crocus of either Iron or Copper, according to the Nature of the Vitriol that hath been diſtilled. From this Proceſs it is evident that Vitriol is compoſed of an acid Salt ſubdued by metallick Parts, which is likewiſe eaſily demonſtrated from the artificial Ways of producing Vitriol. If Spirit of Vitriol be poured on the Filings of Iron, a very good Vitriol is obtained; and if Copper-Plates, ſtratified with Sulphur, be calcined in a Crucible, the Water in which this Calx is made to boil for ſome time, if evaporated, will leave behind a true blue Vitriol.

The Virtues aſcribed by Chemiſts to Vitriol, are paſt Belief, neither do we find the Event to anſwer their Promiſes. *Diaſcorides* mentions an Emetic Quality of it, and ſays that diſſolved in Water it is good againſt Worms in the Inteſtines, and after eating

ing poisonous *Fungi*. He tells us further, that this Solution snuffed up the Nose purges the Head, and reckons it among the astringent, heating, and caustick Medicines. *Pliny* commends it in Diseases of the Eyes, Fluxes of the Blood, and for the Cure of Ulcers, and *Galen* made use of it in Collyriums. At present it is used as an Emetick, Vermifuge, Styptick, Detergent, and Antiphlogistick, but is seldom given inwardly without Preparation. Externally, white Vitriol is chiefly used in Collyriums, to allay an Inflammation of the Eyes, and stop their Running; and it is thus prescribed:

Take of white Vitriol, one Scruple; of Rose or Plantane Water, an Ounce: Let the Vitriol be dissolved in the Water, and strain the Solution, which, if it be too acrid, may be made milder by the Addition of more Water. Or,

Take of the common or Florentine *Iris, a Scruple; Rose and Plantane Water, of each three Ounces: Boil them over a gentle Fire till a third Part be consumed, and in the strained Liquor dissolve eight Grains of Vitriol for a Collyrium.*

Powder of blue Vitriol is applied to the Extremities of the Bleeding Vessels in Wounds, and stops the Bleeding by cauterizing the Vessels, and coagulating the Blood.

Among the Preparations of Vitriol, the first is Purification, called *Gilla* of Vitriol, in which white Vitriol is mostly made use of; it is purified by Solutions, straining, and drying, twice or thrice repeated; and then being taken from a Scruple to a Drachm at a Dose, in a proper Vehicle, will excite Vomiting. This is recommended by *Paracelsus*, and other Chemists, as an excellent Emetick, as not only cleansing the Stomach by gentle Vomiting, but also

alſo ſtrengthening both Stomach and Inteſtines afterward by its Aſtringency, whence it is given with Succeſs in Diarrhœas and Dyſenteries. This *Gilla* very much in uſe before antimonial Emeticks were known, and the Uſe of *Ipecacuanha* was diſcovered, but is now almoſt quite left off.

The Spirit of Vitriol is likewiſe obtained by Diſtillation, in the following Manner:

Take any quantity of green Vitriol, calcine it to Whiteneſs according to Art, and then fill an earthen Retort two Thirds full of it, and diſtil it in a reverberatory Furnace. Begin with a gentle Heat to draw off the phlegmatick Part of the Vitriol; then increaſe the Fire by degrees, till acid Drops begin to appear; and then, having changed the Receiver, and well luted the Joints, raiſe the Fire to the greateſt degree, and keep it up at that Height for three or four Days and Nights, till the white Fumes ceaſe to ariſe from the Retort. After this, having cooled all the Veſſels, pour the Liquor in the Receiver into a Glaſs Retort, with a Glaſs Receiver fitted to it, and diſtil it again in a Sand Heat. The acid Liquor that comes over is termed Spirit of Vitriol, and the heavy and extremely acid Liquor that remains is termed Oil of Vitriol. This Spirit and Oil differ only in this, that in the former the acid Salt is diſſolved in a greater quantity of Phlegm, than in the latter. If during the Diſtillation ſome Fiſſures, or Cracks, be made in the Retort, inſtead of the Oil of Vitriol, a volatile ſulphureous fine Spirit will come over, as has been obſerved by M. Stahl, *which is very much ſought after and commended by Chemiſts.* From this is prepared a celebrated Diaphoretick in acute Diſeaſes, in this Manner: *Take of the volatile Spirit of Vitriol, an Ounce; rectified Spirit of Tartar, three Ounces; Treacle Water, five Ounces,*

Ounces, and mix them together. This Medicine is ſudorifick and anaſeptick, and is given with Succeſs, from a Scruple to a Drachm, in all malignant Diſeaſes.

Spirit of Vitriol, like all other acid Spirits, calms the Ebullition of the Fluids, ſtops Hæmorrhages, promotes the Excretion of Urine, often cures intermitting Fevers, when taken in the Beginning of the Fit, diluted with a ſufficient quantity of Water, ſo that the Liquor retain only a grateful Acidity. It may be dulcified by being digeſted with Spirit of Wine. Oil of Vitriol is cauſtick, and is uſed in many Chemical Operations, but its Virtues are the ſame with thoſe of the Spirit, only it muſt be given in a ſmaller Doſe; and the beſt way of exhibiting all theſe acid Spirits is to drop them into Water, till it attains a grateful Acidity.

Vitriolated Tartar is prepared by ſaturating the Oil of Vitriol with a ſufficient quantity of the Salt of Tartar; and its Virtues are the ſame with thoſe of the *Arcanum Duplicatum*, or *Sal Polychreſtus*; for it is of the ſame Nature with them. The Salt and Vitriol of Iron is made by digeſting and diſſolving Filings of Iron with Oil of Vitriol, and evaporating and cryſtallizing the Solution.

The Maſs that remains after the Diſtillation of Vitriol, called *Colcothar*, is a red Martial Earth, ſtill impregnated with ſome quantity of acid Salt, and by often waſhing and drying it becomes an Aſtringent, which is uſed externally to ſtop Bleeding in Wounds; and from the Water in which it is waſhed, a Salt is obtained, called the fixed Salt of Vitriol, or Salt of Colcothar. When the Colcothar has not been much calcined, it remains white and pellucid, not emetick, but diuretick, and aperient. Though this Salt is ſo much fixed as not to riſe by a very great degree of Heat, continued for ſeveral Days, yet it

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is eaſily made volatile by means of Borax, and is ſublimed in the Form of Silver-coloured ſaline Flowers. This is the Sedative Salt of the great M. *Homberg*, and is thus prepared:

Take the fixed Salt of Vitriol well calcined, and Borax, of each two Ounces: Diſſolve them ſeparately in four Pints of warm Water; and then, having mixed the Solutions, paſs the turbid Liquor through Cap-Paper, and then diſtil it in a Glaſs Alembic, to Dryneſs; which being done, white ſaline ſilver-coloured Flowers will be ſublimed. Theſe are to be gathered, and kept for Uſe. The fixed Salt that remains in the Bottom of the Alembic, by a new Effuſion of Water, may be fitted for a new Diſtillation, which being continued to Dryneſs, freſh Flowers will ariſe; and this Operation may be repeated, till all the Salt is ſublimed. The ſame Preparation may be obtained by taking Oil of Vitriol inſtead of the fixed Salt, and mixing it with twice its Weight of Borax. In this caſe there is no Precipitation, but nevertheleſs Flowers are raiſed of the very ſame Kind with the former.

Theſe Flowers are almoſt inſipid to the Taſte, and not eaſily diſſolved in Water. They calm the feveriſh Heat of the Blood, and eſpecially in burning Fevers; they prevent or remove delirious Symptoms, and allay ſpaſmodick Affections, whether hypochondriacal or hyſterical, at leaſt for a Time. In a word, this Salt is an excellent Anodyne, and has a juſt Title to all the Virtues aſcribed by Chemiſts to Vitriol, Sulphur, or what they call the *Archæus Sedator*. The Doſe is from one to ten Grains, in any proper Liquor. It is however unſafe to order this Salt in Inflammations of the Lungs, ſpitting of Blood, and other Inflammations of the Thorax; for though it be inſipid to the Taſte, yet it contains latent *Spicula*,

which being gradually diſengaged in the Body, may irritate and vellicate the Membranes of the Lungs, and ſo bring on a Cough.

Vitriol is likewiſe the Baſis of the famous *Sympathetick* Powder, to make which they calcine *Roman* Vitriol by the Rays of the Sun in the Dog-Days, to a white or yellowiſh Powder, and keep that Powder for Uſe in Veſſels cloſe ſtopped. *Digby*, and others, have ſaid wonderful things of this Preparation, which are not confirmed by Experience. However, it certainly ſtops Bleeding, when applied immediately to the open Extremities of the Veſſels; and hence ſome have endeavoured to cure Wounds by the Uſe of it, mixing only a ſmall quantity of Gum Tragacanth in caſe of a purulent Diſcharge.

CHAP. IV.

Of ALUM.

ALUM is a Salt either natural or artificial. The Natural is either Liquid or Solid. Of the liquid Alum, two Kinds are taken Notice of by the Antients; one pure, the other impure. The Pure liquid Alum was very common and very cheap. It was a ſmooth, limpid, or milky Subſtance, always moiſt. The Impure was always foul, being mixed with ſome other Subſtance, of a pale Colour, and rough. The Solid, or Concreted Kind, was by the Antients diſtinguiſhed, according to the Figure of its Parts, into Fiſſile and Round. The fiſſile natural Alum was either in Form of a compact, uniform Globe, or appeared divided into ſmall Hairs or Filaments. The round Kind was ſometimes of a more rare Texture, with the Appearance of Bubbles upon it, or full of Holes like a Spunge; and ſometimes conſiſted of ſeveral *Strata*, or Cruſts, laid over each other.

The

The Factitious Alum is diſtinguiſhed only by the Countries where it is made, into a great many different Kinds; and if it is in large Maſſes, like Rocks, it is termed *Rock*, or *Roche-Alum*; and if it looks like the Fragments of Ice, it is termed *Glacial*, or *Icy Alum*. Factitious Alum was entirely unknown to the Antients, but with us is the only Kind in Uſe; for we now know very little of the Natural Kinds, which were formerly ſo common. M. *Tournefort* found two Species of natural Alum in the Iſland *Milos*, or *Milo*; one was in *Strata*, or Cruſts, of an aſtringent Taſte, and an aſh Colour, covered with ſome filamentary Efflorescences, which ſmelled like *Aqua Fortis*, but not near ſo ſtrongly. The other was the Capillaceous, or Filamentary Kind, or true *Alumen Plumoſum*. It was in ſmall Pieces, of the Thickneſs and Length of a Man's Finger, and might by beginning at the Ends, be eaſily divided into ſmall greyiſh Filaments, reſembling a Tuft, or Pencil. It was ſoluble in Water, and melted in the Fire, and of an aſtringent Taſte. Even in *Diaſcorides*'s Time, this Alum ſeems to have been confounded with the *Lapis Amiantus*; for that Author, talking of the fiſſile Alum, obſerves that there was a Stone very like it, and that the way to diſtinguiſh them was by the aſtringent Taſte of the Alum, which the Stone had not; and he might have added, that it could not be melted by Fire, nor diſſolved in Water. The Hiſtory of Medicines being afterwards quite loſt in the Ages of Ignorance and Darkneſs, the Name of the Salt was given to the Stone, and from thence it is that it is, ſtill found thus miſtaken in ſome Diſpenſatories.

The Ways of making Alum are different in different Countries:

In *Italy*, near *Puteoli*, in a Plain called *Solfatara*, the Alum riſes in Form of Flowers ſponta-

neously out of the Ground. *These Flowers are swept into Pits filled with Water, and when the Water is fully saturated with the Salt, they strain it off into leaden Cisterns placed under Ground, till by the Heat of the Earth the greatest Part of the Humidity is evaporated; and then they set the Lixivium in wooden Vessels in a cool Place, to crystallize; which being done, the remaining Humidity is poured off, and the Crystals dried and kept for Use.*

In the Mountains near this Plain, Stones are dug for Building, of which Alum is made in the same Manner as near *Rome*, which is this:

The Stones are sawed asunder, like Marble or Free-Stone, and then burnt in Furnaces in the same Manner as Lime-Stones, for twelve or fourteen Hours. After they are cooled, they are carried to a large Area, in which are several Trenches filled with Water, and there laid in small Heaps. These Heaps are watered from the Trenches three or four times a Day, for forty Days; and at length they begin to ferment, and be covered with a red Efflorescence. After this Preparation the calcined Stones are thrown into a Caldron, where they boil till the saline Substance of the Stones is dissolved. Then they convey this Lixivium, boiled to a proper Consistence, through Pipes or Troughs, into large Vessels of Oak, the earthy or stony Part remaining behind in the Caldron, and in about eight Days time the Alum sticks to the Sides of the Vessels four or five Inches thick. The Crystals are pellucid, and of a pale red Colour. The Liquor that remains uncrystallized is boiled over again, either by itself or with fresh Lixivium. The Crystals being separated from the Sides of the Vessel, and washed with clear Water, and afterwards dried, are

are what is called Alumen Rupeum, *or Rock-Alum, in the Shops, becauſe it comes originally from Rocks.*

The Way of making Alum in *England*, called likewiſe Rock Alum, is different from this, as the Mineral from whence it is prepared comes nearer the Nature of a *Pyrites*, and accordingly will yield Vitriol; and as the *Alga Maritima*, and other things, are mixed with it.

Alum is a ſtrong, aſtringent, acid Drier. The Native Alum ſmells a little like *Aqua Fortis*, but the Factitious has little or no ſmell. When thrown upon live Coals, it riſes in Bubbles, and melts in Water. The Cryſtals of Alum have eight Sides, repreſenting an hexagonal Pyramid, with the Angles cut off, or they are bounded by four hexagonal and four triangular Surfaces. A Solution of Alum coagulates Milk, turns the Tincture of *Heliotropium* purple, makes no Alteration in the Solution of Corroſive Sublimate, turns the Infuſion of Galls turbid and whitiſh; with Salt of Tartar it concretes into a white Coagulum, without any ſenſible Heat or Smoak; and often upon mixing this Solution with Oil of Tartar, an urinous Smell is perceived; but this happens only when the Alum has been purified with Urine, as in the *Engliſh* Alum; but there is no ſuch Smell in the *Roman*.

By Chemical Analyſis Alum yields an acid Spirit, not much different from Spirit of Vitriol, but not in ſo great quantity, nor ſo ſtrong as the Oil of Vitriol; for that aſtringent or abſorbent Earth, which is the Baſis of Alum, retains the acid Salt ſo firmly, that the greateſt Force of Fire cannot ſeparate them. What remains after the Diſtillation of Alum, will cryſtallize into Alum again, if it be firſt diſſolved in Water, and then gently dried. From this Account it is evident, that Alum conſiſts of an acid Salt of the Vitriolick

Kind, and an aſtringent Earth like Bole, or Chalk, very cloſely united together. It is commended by *Diaſcorides* for ſtopping Hæmorrhages, faſtening looſe Teeth, bringing down Swellings in the Gums, ſtopping Defluxions of the Ears, Tonſils, and Uvula, for eating away proud Fleſh, curing Dimneſs of the Sight, cleanſing and drying Ulcers, checking ſpreading Foulneſſes in the Skin, and for ſtopping any diſagreeable Smell in the Arm-pits and Groins. The ſame Authors obſerve alſo that unmarried Women have uſed Alum to procure Abortion, and to conceal the Fault they had committed. *Hippocrates* often uſed the *Egyptian* Alum, and that of *Milos*, in Pains of the Gums, and for various Kinds of Ulcers; but at preſent Phyſicians do not order it often, either internally or externally. In Fluxes of Blood it may be uſed inwardly, in the following Manner:

Take Rock-Alum, a Drachm; Plantane and Knot-graſs Water, of each three Ounces; add to the Solution, Syrup of white Thorn, an Ounce; for a Julep, to be taken by Spoonfuls.

Or, *Take of Pure Rock-Alum, two Ounces; melt it over the Fire, adding in the mean time, of the fineſt Powder of Dragon's Blood, half an Ounce; and make this Mixture, before it grows hard, into Pills as big as a ſmall Pea. The Doſe is from a Scruple to a Drachm, every four Hours, till the Flux is ſtopped; and then once or twice a Day for ſome Days afterwards. After every Doſe the Patient ought to drink a large Draught of ſome proper Liquor. But great Care is to be taken not to ſtop the Flux unſeaſonably, and therefore Bleeding ought to go both before and after it; and Clyſters ought likewiſe to be adminiſtred from time to time, to prevent Coſtiveneſs, which commonly follows on taking this Medicine.*

When

When it is proper to prevent or check a beginning Defluxion in a Quinſey, Gargles may be made with Alum, in this Manner:

Take red Roſe Leaves, and Alum in Cryſtals, of each a Drachm; boil them in eight Ounces of Plantane Water, and in the ſtrained Liquor diſſolve an Ounce of Syrup of Mulberries, for a Gargle.

In Inflammations of the Eyes, the following Collyrium is excellent:

Let the White of an Egg be ſhaken or beat with a Piece of Alum, till it acquires the Conſiſtence of an Ointment. Spread this upon a Linen Rag, and lay it warm to the Eyes.

Riverius orders this Collyrium to be taken off after two Hours, leſt it ſhould by its Aſtringency ſo far contract the Veſſels, as to fix the obſtructed Fluids in them. Some Phyſicians are of Opinion, that repellent and aſtringent Collyriums ſhould not be applied to inflamed Eyes immediately after the Inflammation appears; leſt the Fluids ſtill in Motion ſhould be fixed in the affected Part, and thereby the Obſtruction be increaſed; but, except the Motion of the Fluids toward the inflamed Part be very violent, this Precaution is unneceſſary; and, on the contrary, by increaſing the Strength and Contraction of the Veſſels, theſe Applications enable them to reſiſt the Force of the Fluids; whilſt at the ſame time other proper Means are to be uſed to divert their Courſe another Way, ſuch as Bleeding, Bliſtering, Purging, Cupping, and the like. Beſides, if we ſtay till the Quantity of the obſtructed Fluid is very much increaſed, it is in vain to think of applying Aſtringents, which would ſerve only to condenſe them more, and pre-

vent their being reſolved. In ſcorbutick Diſorders of the Gums, the following Waſh is very proper:

Take of Camphire, an Ounce; Cryſtal Alum, two Ounces; Sugar-Candy, four Ounces; French *Brandy, a Quart: Let them ſtand in a quiet Place for two Days, and then ſtrain off the Liquor, and keep it for Uſe.*

Alum is by ſome reckoned a great Specifick in Intermitting Fevers, when prepared in this Manner;

Firſt calcine it in an open Fire, and while it is ſtill hot throw it into Vinegar, and let it diſſolve; evaporate the Solution, and beautiful Cryſtals will be formed. It is to be taken from a Scruple to a Drachm, in a proper Vehicle, before the Fit.

The uſual Preparations of Alum are, Purification, Diſtillation, and Uſtion or Calcination. It is purified by being diſſolved in fair Water, and then by evaporating and cryſtallizing that Solution in the common Manner. It is diſtilled like Vitriol, and the firſt thing that comes over is an inſipid Phlegm, then an acid Spirit nearly the ſame with Spirit of Vitriol. What remains in the Retort is a white, light, friable Subſtance, called Burnt Alum; being Alum deprived of its Phlegm, and ſome Portion of its Acid, and by a new Solution and Evaporation it will run into Cryſtals, as before Diſtillation. The Phlegm of Alum would be perfectly uſeleſs if pure, but as it contains always ſome Portion of the Acid, and ſome Alum likewiſe, which ſticks in the Neck of the Retort, it becomes a very uſeful external Application in Chirurgical Caſes, for moderating Inflammations, and drying Ulcers. One Drachm of Alum diſſolved in ſix Ounces of this Phlegm, makes an Alum Water, which is an excellent Detergent for Wounds

Wounds and Ulcers. The Spirit of Alum is uſed the ſame way as Spirit of Vitriol. Burnt Alum eats away fungous Fleſh, and is uſefully ſprinkled upon Linnen to abſorb bad Smells ariſing from any Part of the Body.

CHAP. V.

Of Sal Ammoniac.

THE Sal Ammoniac of the Antients was very different from what is now called by that Name. *Salmaſius*, in his Treatiſe *De Homonymiis Hyles Iatricæ*, thinks that the antient Salt was the ſame with Sal Gem; or, if it differed from it in any thing, it was only on account of the different Places where it was found, and in this reſpect the Sal Gem of one Country may now differ from that of another. *Diaſcorides* reckons it among the Kinds of common or alimentary Salt, and ſays that it is foſſil, denſe, pellucid, white and fiſſile, the Fiſſures running in parallel Lines, in all which Properties it agrees with Sal Gem. *Serapion* writes, that Sal Ammoniac is made of hard pellucid Stones, which may very well be ſaid of Sal Gem. *Avicenna* ſays, it is fiſſile, diaphanous and cryſtalline. *Pliny* mentions this foſſil pellucid Sal Ammoniac, and alſo gives an obſcure Hint of another kind of it. In the Country of *Cyrene*, ſays he, Sal Ammoniac is found under the Sands of the ſame Colour with Alum, in long opake Glebes, of an unpleaſant Smell, but uſeful in Phyſick. This Deſcription might be applied to our Sal Ammoniac, were it not for the Words that immediately follow, which I am therefore inclined to think have been foiſted in by ſome other ignorant Hand.

Hand. *The beſt Sal Ammoniac*, ſays the Text, *is tranſparent, with ſtreight Fiſſures.* Whatever be in that, *Pliny*'s Sal Ammoniac and ours differ likewiſe in this, that his was foſſil and native, ours is factitious. The antient Sal Ammoniac was ſo called from that Part of *Lybia*, where the Temple of *Jupiter Ammon* ſtood, where it was found in greateſt Plenty. We have now in the Shops a ſort of native Sal Ammoniac, found in ſulphurous Rocks about *Puteoli* in *Italy*; and may be found in all Places where ſubterraneous Fires do often vomit Flame or Smoke; for the Heaps of Rocks or Stones at the Opening of theſe Caves are continually expoſed to the ſaline Fumes, and after ſome Days a white Soot, or ſaline Cruſt, is found ſticking to the Stones, which being carefully gathered is called Sal Ammoniac. This Soot is Sea-ſalt, or a foſſile Salt, diſſolved in Water, and ſublimed by the ſubterraneous Heat; and the watery Particles being evaporated, the ſaline are condenſed, and ſtick in the Crannies or Chinks of the Stones, like a ſaline Flower, of a ſalt Taſte, ſoluble in Water, reducible to cubical Cryſtals, and ſeeming to differ in nothing from Sea-ſalt.

The common factitious Sal Ammoniac of the Shops, falſely called by ſome *Armoniac*, is of two Kinds; one brought from *India* in conical Loaves, like Sugar, of an aſh Colour; the other comes from *Egypt* and *Syria*, by the way of *Marſeilles*, in round flat Cakes, convex on one Side, with a kind of Umbilicus in the Middle, and a little concave and rough on the other, being about ſix Inches in Breadth, and three or four Inches in Thickneſs; aſh-coloured on the Outſide, and white within, cryſtalline and ſtreaked, of a pungent, acrid, ſalt Taſte. Some relate that this Salt is produced from the Urine of Camels dried in the *Lybian* Sands, the fixed Salt being raiſed, or ſublimed as it were, to the Surface by the heated Water of the Urine. But this Account is not confirmed

firmed by any credible Author. Others think this Salt is produced from the Urine of Camels or Cattle, which is firſt dried, then purified by frequent Lotions, and ſo formed into Cakes. Others again believe that it is made of five Parts of human Urine, one Part of common Salt and Soot, boiled together till the Humidity is evaporated, that the reſt is ſublimed, then diſſolved again, and ſo coagulated. But the true way of preparing this Salt was never known till Father *Sicard*, a *Jeſuit*, Miſſionary in *Egypt*, publiſhed an Account of the Original and Preparation thereof in the *Memoirs of the Miſſions of the Jeſuits in the* Levant, printed at *Paris* in 1723. "Sal "Ammoniac, ſays that Author, is made in ſeveral "Places of *Egypt*, but the beſt at *Damaier* in the "Province called *Delta*. It is ſublimed from a cer- "tain Soot, which is firſt thrown into large Glaſs "Veſſels about a Foot and half in Diameter, with "a little Salt diluted with a ſmall quantity of the "Urine of Camels or other Beaſts of Burthen. "Twenty or thirty of theſe Veſſels, filled two thirds "full, are ſet in Furnaces built for that Purpoſe, "and the Bellies of them covered with Bricks and "Clay. The Sal Ammoniac is ſublimed into the "Neck of theſe Veſſels, a blackiſh Maſs remaining "at Bottom. Every kind of Soot is not proper for "this Purpoſe, but only that made from the Dung "of Animals, eſpecially Camels, which is therefore "collected with great Care; for Wood being very "ſcarce in that Country, they make up this Dung "with Straw into Lumps or Cakes for Fewel, "having firſt dried them very well."

Sal Ammoniac does not change the Tincture of *Heliotropium* immediately, but, after a few Hours, gives it a dark red Colour. It does not coagulate Milk, nor any way affect the Solution of corroſive Sublimate. When mixed with Oil of Tartar, or Lime-water, it yields a penetrating Smell; but with

with Oil of Vitriol it raiſes a violent Efferveſcence, and a very great Degree of Cold. When the Humidity is evaporated, this Salt concretes into pointed Cryſtals, repreſenting in ſome meaſure little Tufts of Feathers. By Chemical Analyſis we obtain from Sal Ammoniac two thirds of a volatile urinous Salt, and a ſmall Portion of an acid Salt, very like the Spirit of Sea-ſalt. The urinous Salt, when diſſolved, coagulates a Solution of corroſive Sublimate, and turns it white, turns the Tincture of Violets green, and raiſes an Efferveſcence and Heat with Acids; but, before it is diſſolved, the Fermentation it makes with Spirit of Vinegar, and the common Spirits of Nitre and Vitriol, is accompanied with Cold. From hence it is plain that Sal Ammoniac is compoſed of an acid Salt, joined with an alcaline urinous Salt, but its chief Effects depend on the latter, which is in much greater quantity than the acid.

Sal Ammoniac is much uſed both by Chemiſts and Phyſicians. When given inwardly, it attenuates viſcid Juices, and promotes Perſpiration, Sweat, and Urine. It is recommended as a great Specifick in Intermitting Fevers, being given in the quantity of half a Drachm, mixed with a Scruple of prepared Crabs-Eyes, before the Fit. In Pleuriſies, when Expectoration is indicated, a Scruple, or half a Drachm of Sal Ammoniac, mixed with Syrup of red Poppies, is ordered with Succeſs. Externally, this Salt, by its little Spicula, penetrates the ſolid Fibres, and attenuates the pituitous viſcid Fluids; and therefore, in Swellings of the Tonſils or Uvula, and in a Palſy of the Tongue, it is uſed as a Gargle, in this Form:

Take of Florentine *Iris Water, ſix Ounces; Pepper and Ginger, of each half a Drachm; Sal Ammoniac, a Drachm: Mix and make a Gargle.*

Or,

Or, *Take Elder Flower Water, ſix Ounces; Spirit of Scurvygraſs, an Ounce; Sal Ammoniac, half a Drachm: Mix and make a Gargle.*

To cure certain white Specks in the Eyes, the blue ophthalmic Water is made in this Manner:

Having poured any quantity of Lime Water into a braſs Baſon, diſſolve Sal Ammoniac in it, and keep continually ſtirring the Liquor, till it becomes of a fine blue Colour.

This Salt is likewiſe uſed in Waſhes and Fomentations, to diſſolve œdematous or gouty Tumors, and to conſume the putrid Fleſh of a Gangrene.

Sal Ammoniac is purified by Solution, ſtraining, drying, *&c.* as the other Salts; and likewiſe by Sublimation, in this Manner:

Take Sal Ammoniac, and common Salt, of each equal Parts; ſublime them according to Art. The white Flowers that ariſe are termed the Flowers of Sal Ammoniac.

To obtain the volatile Salt, urinous Spirit, and acid Spirit of Sal Ammoniac, *Take that Salt, and Salt of Tartar, of each equal Parts; ſublime and diſtil them according to Art, in a Glaſs Alembic. The firſt thing that ariſes is a volatile urinous Salt, in a dry Form; next, the Spirit, or another Portion of the ſame Salt diluted in a ſmall quantity of Phlegm. The ſaline Maſs which remains at the Bottom, being diſſolved in Water, and cryſtallized, is the febrifugal Salt of* Sylvius, *conſiſting of Salt of Tartar and Sea-ſalt. It is given, in the quantity of two Scruples, in the Beginning of the Paroxyſm, and ſometimes it ſucceeds. This Salt, diſtilled with three times its quantity of Bole, yields an*

an acid Spirit, of the ſame Nature with Spirit of Sea-ſalt.

A moſt penetrating pungent Spirit of Sal Ammoniac is obtained by diſtilling it in a gentle Heat, with three times its Weight of Quick Lime. This Spirit, mixed with rectified Spirit of Wine, concretes into what is called the *Oſſa Helmontii*, which cannot be produced from Spirit of Sal Ammoniac made with the Salt of Tartar.

Sylvius's volatile oily Salt, ſo highly eſteemed by ſome, is made of Sal Ammoniac and ſome Spices, in this Manner:

Take of Cardamums, an Ounce; Cinnamon, a Drachm and an half; Nutmeg, ſix Drachms; Cloves and Cubebs, of each two Drachms; Salt of Tartar, an Ounce; Sal Ammoniac, four Ounces; Spirit of Wine, a Quart: Let them be macerated in a cloſe ſtopped Glaſs Veſſel for a Day, then diſtil them in an Alembic of Glaſs.

It may likewiſe be made *extempore*, thus:

Take volatile Spirit of Sal Ammoniac, and rectified Spirit of Wine, of each four Ounces; Oil of Citron-Peel, and Mace, of each a Drachm; of Cinnamon, half a Drachm: Mix them together.

Sal Ammoniac, and its Spirit, becauſe of their moſt penetrating Smell, when applied to the Noſtrils, are uſed in that manner with Succeſs in Lethargies, Apoplexies, Syncope, Giddineſs, and the Hyſterick Paſſion, to raiſe the drooping Senſes, to ſtimulate the nervous Membranes, and to excite the animal Spirits. The Spirit is likewiſe proper for Rheumatick and Paralytick Diſorders, being mixed with Oil of Earth-Worms, or any other Oil of that Kind, and applied to the Part affected as an Ointment.

ment. Internally taken, this Salt and Spirit promote a Diaphoresis, Sweating, and the Excretion of Urine, correct the acid Juices that lurk in the Body, help the Circulation of the Fluids, refresh the Spirits, and increase the oscillatory Motions of the Nerves, and thereby remove Obstructions. On these Accounts, the Spirit and volatile oily Salt are given from six Drops to sixty, in Apoplexies, Epilepsies, Lethargy, in sleepy Affections, in hysterical Complaints, and in Malignant Fevers. We ought, however, to be very cautious not to give the volatile Spirit of Sal Ammoniac, or any other subtile penetrating Liquors of that Kind, in too great Quantities, especially without Mixture; lest they should inflame the Membranes of the Œsophagus and Stomach, and burn like Caustick. The best way therefore is to dilute them with a large quantity of any small Liquid.

Sal Ammoniac is much used by the Chemists to volatilize fixed Bodies, to extract the Sulphurs of Metals, and other Minerals; and also to draw their Mercury from them, as they pretend. Hence they have given it various Names, such as the *Heavenly Eagle*, the *Flying little Bird*, the *Solar Salt*, the *Mercurial Soot*, the *Mercurial Salt of the Philosophers*, the *Mineral Stone*, the *Key of Metals*. Sal Ammoniac is used in preparing the Flowers of several Metals; such as Iron, Copper, Blood-stone, and others, of which in their proper Places. *Aqua Regia*, in which Gold is soluble, is made by mixing Sal Ammoniac with Spirit of Nitre. Besides this common Sal Ammoniac, the Chemists have contrived several other Sorts; such as that made by mixing the volatile Salt of Urine with Spirit of Nitre, of Vitriol, or of Vinegar; by which Ammoniacal Salts are produced, which easily rise in Flowers, and are thereby fitted for the Volatilization and Attenuation of the Parts of Metals.

CHAP.

CHAP. VI.

Of Chrysocolla and Borax.

NITRUM, Baurach, Baurachium, Borax, Tincar, Chrysocolla, are synonymous Terms. The ancient *Greeks* used the Word Νίτρον; the *Arabians*, *Baurach*; from whence the modern *Greeks* took their Βῶραξ, and Βράχιον; and the barbarous *Latins*, *Borax*; all these Terms signifying the *Egyptian* or *African* Nitre already mentioned. *Tincar* is an *Arabic* Word, signifying one Species of Nitre which served to solder Gold, and from thence came the Term *Chrysocolla* of the modern *Greeks*, which by the Antients was used to express a Substance of a quite different Nature. *Serapion* writes, that *Tincar* was a kind of Salt, which was in Taste something like *Borax*, or *Egyptian* Nitre; and that there was a Species of Nitre, or *Aphronitrum*, of which *Tincar* was made. We must not therefore imagine that the modern *Borax*, or *Chrysocolla*, is the same with that of the antient *Greeks*, such as *Diascorides* and *Galen*. The antient *Chrysocolla* was a kind of Metallick Medicine, and they had two Sorts of it, Natural and Factitious. The Natural grows in Veins of Copper; and if ever it is found in the Mines of other Metals, it is a sure Sign that they are mixed with Copper. It is found sometimes like a loose Sand, sometimes adhering to some metalline Matter, from which, when it is separated, it appears again in the Form of Dust or Sand. All this Natural *Chrysocolla* is of a green Colour, though not always in the same Degree; for some is of a very deep Green, like a Leek or Emerald, which is the least esteemed; some is of a fainter Green, and more valuable.

This

This *Chryſocolla* is refined by different Waſhings, in this Manner:

It is put firſt of all into a Mortar, and Water poured upon it. As ſoon as it has ſettled to the Bottom, this Water is ſtrained off, and freſh poured on, with which it is ground and rubbed with a Peſtle, and theſe Lotions and Grinding are continued till the Water comes off clear. Afterwards it is dried in the Sun, and kept for uſe. If it be deſired ſtill finer, it is bruiſed and calcined over the Fire, and then waſhed as before.

Factitious *Chryſocolla* is of two Kinds; one called *Herbacea*, the other *Santerina*. The *Chryſocolla Herbacea*, according to *Pliny*, was made in this Manner:

Native Chryſocolla, *firſt well bruiſed, calcined, and powdered very fine, is macerated in Vinegar, then pounded again, waſhed, and dried, and coloured with what he calls the* Herba Lutea, *whence the Painters who uſe it gave it the Name of* Herbacea. *It is likewiſe called* Orobitis, *either from the Colour of Vetches, or becauſe it was made up in Grains reſembling Vetches in Figure.*

The *Chryſocolla Santerna*, according to *Pliny*, is made of *Cyprian* Verdegreaſe and the Urine of a healthy Child, with an Addition of Nitre, all which are beat together in *Cyprian* Mortars. *Galen*, following *Diaſcorides*, does not mention the Nitre, but informs us that this Kind of *Chryſocolla* is prepared in the Summer Time, or in a very warm Air; and that the Urine muſt be brought to the Conſiſtence of Honey, before it is uſed. *Diaſcorides* ranks this Species among the *Ærugines* or Verdegreaſes. *Pliny*

ſays that it was uſed in Phyſick; and *Galen*, that it was uſed by the Goldſmiths for ſoldering Gold.

This is what we find in *Pliny*, *Diaſcorides*, and *Galen*, concerning *Chryſocolla*. We muſt, in the next place, examine, whether our Borax be any of the Kinds thereof above mentioned. There are two Kinds of Borax now in the Shops; one called Native, the other Native Borax refined. The Native Borax is brought to us in Pieces about the Size of a Hazel Nut or Walnut, of a dark green Colour, foul and earthy, and ſmeared over, as it were, with ſome kind of Fat or Oil. It is dug up in ſeveral Places, but eſpecially in the Empire of the *Great Mogul*, and in *Perſia*. In theſe Countries, in ſeveral Mines, but eſpecially in thoſe of Copper, is found a ſaline turbid Water, of a greeniſh Colour, which is collected with great Care, and being evaporated to a proper Conſiſtence, then being formed into a Paſte with the Mud or Slime of the Springs from whence it ariſes, and with the Fat of ſome Animals, it is laid in Pits dug in the Earth, and left there for ſeveral Months. Afterwards the Pits being opened, the Water is found concreted into Hairs or Threads. Theſe Threads, dug out of the Pits with the fat Earth about them, is the Native Borax of the Shops. The refined Borax are a Subſtance made up of clean white pellucid Threads, like Cryſtals of Alum, having a ſalt Taſte, with ſome Degree of Acrimony, ſoluble in Water; and is only the Former, or Native Borax, purified by a Lixivium of Quick Lime. We had it formerly from *Venice*, whence it was termed *Venetian* Borax, but now the refining of this Drug is almoſt entirely in the Hands of the *Dutch*.

It is evident therefore that the Officinal Borax is different from the *Chryſocolla* of the Antients; for that was a Species of native Verdegreaſe, not ſoluble in

in Water, and which, according to *Diaſcorides*, excited vomiting, and ſometimes proved poiſonous. Our Borax is a Kind of Salt, ſoluble in Water, and never poiſonous; but I cannot be poſitive whether it be really different from the Borax or Tincar of the *Arabians*, becauſe none of that is ever brought to us. Thus far we may be ſure, that they do not both come from the ſame Countries.

The Officinal Borax ſwells and riſes in Bubbles in the Fire, like Alum, and afterwards melts quietly, and concretes again into a hard pellucid Maſs, like Glaſs, ſtill ſoluble in Water. By being expoſed to the Air, it is in a manner calcined, and becomes opake. It yields nothing in Diſtillation but an inſipid Phlegm, nor does it raiſe any Efferveſcence either with Acids or Alcalies, but quickly unites with Oil of Vitriol; and though they are both fixed, they form by their Union an inſipid Volatile Salt. A Solution of Borax does not change the Tincture of *Heliotropium*, but turns Syrup of Violets green; when mixed with a Solution of Sal Ammoniac, it ſends forth an urinous Smell; and it turns a Solution of Corroſive Sublimate, of a Saffron Colour. Hence it follows that Borax is a fixed Alcaline Salt, ſomething of the Nature of Salt of Tartar, but differing from it in this, that it ſuffers acid Salts to be united with it, without any Tumult.

Borax has a two-fold Uſe, Mechanical and Medical. Goldſmiths uſe it to ſolder Gold, and facilitate the Fuſion of Metals; and Dyers to give a Gloſs to Silk Stuffs. Phyſicians uſe it to promote Delivery, to bring away dead Children and the Secundines, and to forward the ſuppreſſed Menſes or Lochia. The Doſe is from half a Scruple to a Drachm. As an Emenagogue, it may be thus preſcribed:

Take of Borax, a Scruple; Myrrh, twelve Grains; Oil of Cinnamon, one Drop; Saffron, three Grains:

Mix them, and make them into a Powder, to be taken either in a Glaſs of Wine, or in a ſufficient quantity of Syrup of Mugwort, at the Time that the Menſes are expected.

To bring away the *Placenta*,

Take Borax and Myrrh, of each fifteen Grains; Birthwort and Saffron, of each three Grains; Oil of Savine, two Drops; Syrup of the Five Opening Roots, a ſufficient quantity to make a Bolus.

The Good Women having obſerved that Borax ſerved to clean and give a Gloſs to Silk, have imagined that it might be good likewiſe to clear the Skin, and for that reaſon it is frequently uſed in Coſmetick Waſhes and Pomatums.

Borax is an Ingredient in the *Unguentum Citrinum*, in the Powder for difficult Births of *Charas*, in the *Balſamum egregium pro manibus*, and in the *Aqua Coſmetica Columbarum*, of the ſame Author.

SECT.

SECT. V.

Of Bituminous Juices.

BY *Bituminous Juices* we mean ſuch Mineral Suſtances as are inflammable, ſoluble in Oil, and which may be mixed therewith. Theſe may be divided into Bitumens properly ſo called, whether Liquid or Solid, into Sulphurs and Arſenic.

CHAP. I.

Of Liquid Bitumens.

LIquid Bitumens are mineral Fluids, either of a thinner Conſiſtence, like Oil, called *Naphtha*, or *Petroleum*, or of a thicker Conſiſtence, like Pitch, called *Piſſaſphaltum*, or Mineral Pitch.

ART. I. *Of Naphtha, or Petroleum.*

THE *Naphtha* of *Diaſcorides*, *Petroleum* of the Shops, is a ſubtle, inflammable, mineral Oil, with a fragrant bituminous Smell, of different Colours, either white, yellow, red, or black. Different Names are given it by Authors. The *Babylonians* gave the Name of *Naphtha* to an Oil, either black or white, which flowed from ſome Fountains near *Babylon*. It was likewiſe called the Oil of *Medea*, becauſe ſhe is ſaid to have burnt *Creon*'s Daughter to Death by anointing her with this Oil.

It had the Name of *Petroleum*, becauſe it diſtils from Rocks. By *Myrepſus* it is termed *Allicola*; by others, the Oil of St. *Barbarus* the Abbat, the Oil of St. *Catharine*, or the Holy Oil. The Word *Naphtha* comes from a *Greek* Verb which ſignifies *to light*, or *kindle*.

There are few Countries in which this Oil is not to be found. In the Iſland of *Sainos*, a kind of it is gathered, called by the Inhabitants by a Name which ſignifies *Oleum Terræ*; and it is in great Eſteem among the *Indians*. In *Italy*, near *Modena*, this Oil is gathered from Springs and Wells; and indeed this whole Dutchy abounds with it, eſpecially at a Place called *Frumetto*. The Inhabitants dig Wells to the Depth of thirty or forty Feet, till the oily Spring is found, and there it is always mixed with Water. The Wells dug at the Foot of the Hill furniſh a large Quantity of very red Oil; thoſe near the Top, a white Oil, but in ſmaller Quantities. There is another Rock in the ſame Country, near the *Apennine Hills*, where there is a perpetual Spring of Water, on which this Oil ſwims of a yellow Colour, and in ſo great Quantities, that twice a Week they gather ſix Pounds of it at a time. *Petroleum* is found likewiſe in *France*; and particularly in *Britany*, near *Beriers*, a red Oil mixed with Water flows from the Crannies of ſome Rocks, which is collected with great Care, being no way inferior to the reſt in Virtue. There is another ſuch Fountain near *Clermont* in *Auvergne*.

Petroleum eaſily takes Fire, and it is the Cuſtom in many Places to burn it in Lamps inſtead of common Oil. It is plentifully ſtored with fine volatile Parts, which eaſily evaporate, and are ſo greedy of Fire, that if a lighted Torch, or any other flaming Body, be held in the Wells or Fountains of *Petroleum*, the exhaling Effluvia very often take Fire. It is difficultly mixed with Spirit of Wine. By Diſtillation

ſtillation it yields an oily Liquor, ſomething more pellucid than before; but it loſes a great deal of its native Smell, and gives a more languid and leſs fuliginous Flame. A ſmall Quantity of a yellowiſh *Magma* remains at the Bottom of the Alembic; and from all this it is evident that *Petroleum* is not at all bettered by Diſtillation. The beſt *Petroleum* is reckoned that which is freſh gathered, of a ſubtle bituminous Smell, white and pellucid; next to that is the yellow, then the red; but the black is counted the moſt impure of all.

Diaſcorides commends it in Suffuſions and Dimneſs of the Eyes. The *Petroleum* of *Britany* is given, a few Drops at a time, with very great Succeſs, in what is called a Suffocation of the Uterus, and to kill Worms in Children.† It is proper in a Suppreſſion of the Menſes, taken in the quantity of twenty-five Drops, or the Region of the *Pubes* being anointed with it. In a Palſy accompanied with cold Pains in the nervous Parts, the Part affected is anointed with it. *C. Luſitanus* commends the Uſe of it in ſtopping the Progreſs of a Schirrus, made up in the following Liniment:

See Hafenreffer's Treatiſe p. 388.

Take Oil of Myrtle, and of Nutmegs, of each half an Ounce; the Fat of any Beaſt of Burthen, two Ounces; Petroleum, three Ounces: Mix them together.

Art. II. *Of Piſſaſphaltum.*

THE *Piſſaſphaltum* of *Diaſcorides*, and of the Shops, or mineral Pitch, is a black or red kind of Bitumen, of a fragrant and not unpleaſant bituminous Smell, viſcid, or of a middle Conſiſtence between Petroleum and a ſolid Bitumen, not unlike the common Pitch, fuſible by Fire, concreſcible by Cold, and eaſily inflammable. It is compounded of two

Greek Words which ſignify Pitch and Bitumen, and the Compound might be rendered a *Bituminous Pitch*, or *Pitchy Bitumen*; the Reaſon of which Name is not that it conſiſts of an artificial Mixture of theſe two Subſtances, but that it ſmells like ſuch a Mixture. It diſtills from Rocks, or ſprings from the Earth in ſeveral Countries. That which was brought from *Epidaurus* is commended by *Diaſcorides*; and in *Italy* they uſe that which is found in the *Campania di Roma*, about ſixty Miles from the City, near a little Town called *Catho*. It ouſes through the Crannies of Rocks in the Summer time, of the Conſiſtence of Honey, of a black Colour, and penetrating Smell. There is likewiſe a plentiful Spring of this Bitumen in *Auvergne* in *France*, which is ſoft and black, like Pitch, and of a bituminous Smell. If it be kept a great while, it grows hard, retaining ſtill ſomething of its fatty Conſiſtence, and never grows ſo dry or hard as the ſolid Bitumens.

Freſh *Piſſaſphaltum* is digeſtive, maturating and reſolvent. It is uſed in ripening Buboes, reſolving Tumors, diſcuſſing Sciatick Pains, and to ſtrengthen luxated Parts after they have been reduced. A Mixture of this, and ſlimy or muddy Clay, is called *Maltha*, and was uſed as Mortar in building the Walls of *Babylon*, according to *Vitruvius*.

CHAP.

CHAP. II.

Of Solid Bitumens.

A Solid Bitumen is a hard friable Subſtance, fuſible by Fire, eaſily inflammable, and which is condenſed and dried by Cold. It is ſoluble in Oil, not in Water, and of different Colours. It is formed in the Bowels of the Earth; and while it remains ſoft, is carried along with the Waters, either into Springs or into the Sea, where it grows hard in a very little time. Other ſolid Bitumens are dug out of the Earth in that Form; and therefore though they were all once ſoft and fluid, they are divided into ſuch as are collected from Water, ſuch as the *Bitumen Judaicum*, and Ambergreaſe; and ſuch as are dug out of the Earth, as yellow Amber, Jet, and Pitcoal.

ART. I. *Of the Bitumen Judaicum.*

THE *Aſphaltum* of *Diaſcorides*, and *Bitumen Judaicum* of the Shops, called *Carabe* and *Gummi Funerum* by *Serapion*, and by others *Mumia*, is a ſolid, brittle, ponderous Subſtance of a red, blackiſh, or dark Colour; eaſily inflammable, and of a ſtrong bituminous Smell, eſpecially when warm, and fuſible by Fire. It is found in ſeveral Places; but the beſt is that which comes from *Judea*, where it is gathered on the dead Sea, called from thence the Lake *Aſphaltites*. It is probable that a great Quantity of this Bitumen riſes from the Bottom of that Lake, to the Surface of the Water. At firſt it is ſoft, viſcid and glutinous, that it can with Difficulty be ſeparated from any Part which it touches; but in time it grows harder than Pitch, and from the Place where it is found,

found, it is called *Carabe* of *Sodom*, *Carabe* being uſed often by the *Arabians* to denote any ſolid Bitumen, and the *Dead Sea* being the Lake where *Sodom* ſtood. The Names of *Gummi Funerum* and *Mumia* were given it becauſe the common People among the *Egyptians* uſed it in embalming and preſerving dead Bodies.

The true *Bitumen Judaicum* is ſeldom brought to us; for *Diaſcorides* directs us to make choice of that which ſhines like Purple, and to reject the black kind as being foul, and of ſmall Value; but all that we ſee of that kind is black; though even that, when broken in Pieces, appears againſt the Light to be of a Saffron Colour; and therefore it is poſſible this may be the ſame kind recommended by *Diaſcorides*, only boiled to a hard Conſiſtence in Braſs Kettles before it is ſent to us.

It is of a diſcutient, emollient, and agglutinating Quality. It diſſolves coagulated Blood, and promotes the Menſtrual Diſcharge. It is an Ingredient in *Venice* Treacle, and in the embalming Powder of *Charus*.

Art. II. *Of Ambergreaſe.*

AMBER, called alſo *Ambarum Cencraceum*, and *Ambra Gryſea* in the Shops, is a ſolid, ſebaceous, or fat Subſtance, not ponderous, of an aſh Colour, variegated like Marble, and marked often with white Specks. It flows out of the Earth in Form of a ſoft Bitumen into the Sea, where it hardens, and is found either floating on the Surface of the Water, or caſt on the Shore. This Subſtance was unknown to the ancient *Greeks*; for no Author mentions it before *Aetus*; neither are the Words *Ambar*, or *Ambarum*, uſed by the modern *Greeks* and *Arabians* to ſignify yellow Amber, or *Succinum*, before *Avicenna* and *Simeon Sethi*. And from hence a great deal

deal of Confuſion has ariſen in the Application of this Term by later Authors.

There are two Kinds of Ambergreaſe, the aſh coloured and black. The firſt is to be preferred, when cleared of all Filth, with a ſtrong Smell and light, and which, being pricked with a hot Needle, drops a fat odorous Juice. The black is leſs eſteemed, as being mixed with Earth or Mud, or adulterated according to ſome.

Authors are not agreed about the Nature of Ambergreaſe: Some take it to be the Dung or Fæces of Birds; ſome, the Excrement of Whales; ſome, a vegetable Reſin; ſome, a Species of Camphire; ſome, the Froth, or *Scum*, of the Sea concreted: And others think, that it is Wax or Honey mixed with the Salt of the Sea, and digeſted and baked by the Heat of the Sun. But there is now no room left to doubt, but that it is a kind of Bitumen flowing from the Earth into the Sea, ſoft at firſt, but afterwards concreted and condenſed; for in the Middle of the Lumps, or Glebes of Ambergreaſe, we find Stones, Shells, the Bones of Animals, the Beaks and Claws of Birds, Honey-combs filled with a ſoft Wax, and other things of that ſort, which could never have remained lodged in this Subſtance, had it not been once ſoft and likewiſe viſcid, like a Bitumen. The Glebes of Ambergreaſe are ſometimes found ſo big as to weigh above two hundred Pounds. It is gathered in great Quantities about the *Molucco* Iſlands, in the *Indian* Sea, and is frequently found on the Shores both in the *Eaſt-Indies*, and in *Africa*. Pieces of it are likewiſe met with on the Northern Coaſts of *England*, *Scotland*, *Norway*, and *Ireland*, being thrown aſhore by the Tide.

Ambergreaſe melts by Fire into a Gold Colour'd or yellow Reſin. It is eaſily inflammable, and is all ſoluble in Spirit of Wine, except a black, pitchy Matter, which the Spirit leaves untouched. When this

this Solution has ſtood for ſome time, it lets fall a cloudy Sediment, which is by degrees inſpiſſated and coagulated by the Evaporation of the fine Particles of the Spirit; and when this Coagulum is dried, it turns to a ſhining foliaceous Earth, not unlike *Sperma Ceti*.

In diſtilling Ambergreaſe we get firſt an inſipid, then an acid Liquor or Spirit, and a yellow Oil of a moſt penetrating Smell, with a ſmall Portion of acid volatile Salt, like Salt of Amber, a black, ſhining, bituminous Matter remaining in the Retort. From whence it is plain that Ambergreaſe conſiſts of fine volatile Parts, intangled in other thicker Parts, both ſaline and bituminous.

This Drug is very much uſed by Confectioners and Perfumers, in giving a fine Smell to their Preparations; and is recommended by Phyſicians as proper to raiſe the drooping Spirits, to ſupply the Defect thereof, and to accelerate their Motions. Hence it is both a cephalick and cordial Medicine, enlivens the Senſes, and is very effectual in Faintings, and all other Affections of the Head and Nerves. It is thought to be very inſtrumental in prolonging Life, and in producing ſuch Effects as are neceſſary for Generation. This Opinion prevails chiefly among the *Eaſtern* Nations.

It is uſed both outwardly and inwardly. The Doſe in Subſtance is from one to four Grains, taken in a potched Egg, or in a Glaſs of Wine with Sugar and Spices. The Tincture extracted with Spirit of Wine is given from one to ten Drops. This Tincture is either Simple or Compound. The Simple Tincture is made by only diſſolving the Ambergreaſe in Spirit of Wine, and then ſeparating the Solution from the Fæces. The Compound Tincture is very fragrant, and is prepared in this Manner:

Take

Take Ambergreaſe and Sugar-Candy, of each two Drachms; Musk, twelve Grains; Civet, two Grains; Spirit of Wine, four Ounces: Digeſt them in a Glaſs Veſſel for ſome Days, and then decant the Liquor, and keep it for Uſe. The Doſe is from one Drop to eight or ten, taken in Spaniſh *Wine, Cinnamon Water, or any other Liquor.*

Riverius commends Ambergreaſe as a Strengthener of the Stomach, and as a Specifick in the *Fames Canina*; and he likewiſe orders it in Hypochondriacal Melancholy, after Purging, and a due Uſe of diluting Liquors, for reviving the native Heat, and exhilarating the Spirits. It is however to be obſerved that all Perfumes and ſtrong Smells are hurtful to Hyſterical Women, and thoſe in Child-bed; and the ſame thing is remarked in many Hypochondriacal Men; for at this time few People can bear Perfumes or ſtrong fragrant Smells, and for that Reaſon, the Compoſitions uſed by former Phyſicians, in which Ambergreaſe was an Ingredient either alone or joined with Musk, are now almoſt quite laid aſide. Sweet Smells, though offenſive to hyſterical Women, are, nevertheleſs, of great Service to them, applied by way of Fumigation to the *Uterus*. Ambergreaſe is an Ingredient in the *Pulvis Diambræ* of *Meſue*, the *Pulvis Aromaticus Roſatus* of *Gabriel*, the *Pulvis Lætificans* of *Nicolaus Præpoſitus*, the *Pulvis contra Peſtem* or *Bezoarticus* of *Renaudæus*; in the *Electuarium Diaſatyrion* of *Charas*, in the *Tabellæ Magnanimitatis* and *Apoplectick Balſam* of that Author, and in the *Confectio Alkermes & Hyacinthi*, when they are compleat; for in theſe Compoſitions both the Ambergreaſe and Musk are often ordered to be left out.

ART. III.

ART. III. *Of Amber.*

AMBER, called by various Names by the *Greek* Writers, *Succinum* by the *Latins*, *Karabe* by the *Arabians*, *Hambarum* by the *Barbarous* Writers, and yellow or Citrine Amber in the Shops, is a bituminous, hard, dry, brittle, pellucid Substance, sometimes of a yellow, sometimes of a whitish, and sometimes of a dark Colour; of an acid bituminous Taste, with a small Degree of Astringency, and when warm, of a fragrant bituminous Taste; inflammable, and indued with that Property called from thence Electricity. *Dioscorides* has mentioned two Kinds of Electrum or Amber, one called πτερυζοτόεσν, because it attracts Feathers, named by others *Lyncurium*, from an Opinion that Amber was the Urine of the *Lynx* indurated to the Consistence of a Stone; the other, from its Gold Colour, called *Chrysophorum*, which, he says, was taken by some for the *Lacryma*, or Exsudation of the Black Poplar; but he absolutely rejects the other Origin, from the Urine of the *Lynx*. We may venture to affirm therefore, that the Origin of Amber was entirely unknown to *Dioscorides*. It was called likewise *Hyalas*, from its Resembance to Glass in Splendor and Transparency; and *Harpax*, from its attractive Quality. The *Latin* Name, *Succinum*, seems to have been given it from the prevailing Opinion that it was the Juice of some Tree. The Barbarous Name, *Ambarum*, is said to be derived from two *Arabick* Words which signify the *Roman* Poplar. *Karabe* comes either from a *Persian* Word which expresses its attractive Quality, or from an *Arabick* Word which signifies a kind of Bitumen.

There have been various Opinions concerning the Origin of Amber. *Dioscorides*, as we have already said, was uncertain about it. *Pliny* writes that it is an Exsudation from a kind of Pine-Tree, which grows

grows in the Iſlands of the Northern Ocean, condenſed by Cold; and falling into the Sea, is carried to the neareſt Shores of the Continent, and there gathered. But at preſent there is no Doubt to be made but that it is a bituminous Mineral Juice, formed in the Bowels of the Earth, liquid at firſt, but afterwards concreted into a hard ſolid Subſtance; for in ſeveral Parts of *France*, eſpecially in *Provence*, it is dug out of the Mountains, and likewiſe in *Italy* and *Sicily*; but all this is of the dark and leaſt valuable Kind. The beſt is found in *Pruſſia*, where it is of two Kinds; one dug out of the Earth; the other found on the Sea-ſhore, which is of the ſame Nature with the former. *Hartmannus*, who has wrote an accurate Hiſtory of Amber, is of opinion that all *Pruſſia* and *Pomerania* ſtands upon a Bed of that Bitumen, becauſe in digging Pits the Inhabitants always meet with great Quantities of Amber, ſometimes at a very ſmall Diſtance from the Surface of the Earth. The chief Amber Mines are near the Sea Coaſt of *Pruſſia*, and from the Shore where they are ſituated, an Hill ariſes, made up of a cortical Kind of Subſtance, and reſembling Heaps of the Bark of Trees laid together. The exterior *Strata* are of an aſh Colour, and dry; the interior are black, ſoft, and bituminous. Under theſe *Strata* is found a Subſtance like Wood, not compoſed of different Ranks of Fibres, contorted or woven together like vegetable Wood, but of different flat Laminæ laid upon one another, which may be called a foſſil Wood. This Subſtance *Hartmannus* believes to be the Matrix of Amber, becauſe a great Quantity thereof is contained in the Veins of the Wood, and it is very ſeldom found without this Wood. And here I cannot but obſerve, that in other Places where Amber is found, this foſſil Wood is likewiſe met with, as alſo the *Lapis Lyncurius*, and Mineral Native Vitriols. The Amber which is gathered on

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the Sea-ſhore comes from theſe ſucciniferous Hills beat to Pieces by the ſtormy Sea, and ſo carried along with the Waves, and afterwards thrown on the Shore.

Authors are not agreed which of the three Kinds of Amber, the Yellow, White, or Dark, is to be preferred for Phyſical Uſes. The Yellow contains the greateſt quantity of Oil, and by Rubbing gives a bituminous Smell, that is not unpleaſant. The White has leſs Oil, and the Brown more Earth. Therefore when the volatile Salt is wanted, the White is to be preferred; when the Oil of Amber is deſired, the Yellow ought to be made choice of; but the Brown is to be rejected, as moſt unfit for both.

Amber is ſoluble in Spirit of Wine, and likewiſe in *Oleum Spicæ*, Oil of Lavender, and of Linſeed; but with more Difficulty. In Diſtillation, Amber yields a Phlegm, which is not inſipid, but a little acid, and alſo mixed with ſome earthy Portion of Oil. Next to that we get a thick browniſh Oil. A much greater Quantity of volatile Salt is obtained from White Amber than from Yellow. For from a Pound of the firſt we get four Drachms of Salt, whereas from the ſame quantity of the ſecond we get hardly one Drachm. When the Diſtillation is over, a black ſhining *Caput Mortuum* remains in the quantity of an Ounce for every Half Pound of Amber. The Salt of Amber being diſſolved, and afterwards evaporated, does not cryſtallize, but runs into little Grains like Millet or Hail; but if it be ſublimed in a Glaſs Veſſel with a long Neck, it will be raiſed to the upper Part of the Veſſel in white Flakes like Snow, armed with ſmall ſhort *Spicula*, of an acid and not unpleaſant Taſte, making no Effervescence with Spirit of Vitriol, but abſorb'd by the volatile Spirit of Sal Ammoniac, or Oil of Tartar, with an hiſſing Noiſe, and the Appearance of many Bubbles.

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From these Trials we may conclude that Amber consists of a thicker kind of bituminous Fat, and of another fine subtile oily Part joined to a volatile Acid, such as exhales from lighted Sulphur, and inspissated thereby.

Many great Virtues are ascribed to Amber, especially when taken inwardly, in a cold State of the Brain, and in Catarrhs, in the Head-Ach, sleepy and convulsive Disorders, in a Suppression of the Menses, Hysterical and Hypochondriacal Affections, in a Gonorrhœa, *Fluor Albus*, and Hæmorrhages. The Dose is from a Scruple to a Drachm, in a potched Egg, or any other proper Vehicle:

Take, for Instance, *of Amber finely powdered, or reduced to an Alcohol on a Porphyry, Conserve of Red Roses, and Rosemary Flowers, of each half a Drachm; Syrup of Stœchas, a sufficient quantity for a Bolus; to be taken in the Morning, to check the Flux of Rheum, and blunt its Acrimony in Colds in the Head, Catarrhs, and Running at the Nose.*

Take prepared Amber, Camphire, and Dragon's Blood, of each a Drachm; Syrup of dried Roses, a sufficient Quantity to make an Opiate; of which the Quantity of a Drachm is to be taken every Morning in a Gonorrhœa, after due Preparation of the Body.

Take prepared Amber, and prepared Millepedes, of each two Drachms; Myrrh, half a Drachm; Conserve of the Flowers of white Dead Nettle, one Ounce and Half; Syrup of common Yarrow, a sufficient Quantity for an Opiate; to be taken in the quantity of two Drachms twice a Day in the Fluor Albus.

Take of prepared Amber, a Scruple; Sperma Ceti, *and* Terra Japonica, *of each fifteen Grains*; *Syrup of Ground-ivy, or of Diacodium, a ſufficient Quantity to make a Bolus, in a Spitting of Blood, or an habitual Cough proceeding from an acrid Phlegm.*

Take of Amber, half a Drachm; *Caſtor and Myrrh, of each twelve Grains*; *Saffron, ſix Grains*; *Conſerve of Wormwood or Extract of Rue, a ſufficient Quantity to make a Bolus, in Hyſterical Suffocations, and in a Suppreſſion of the Menſes.*

Externally Amber is uſed as a Fumigation, in Cataplaſms, and Cucuphæ, in Diſorders of the Head or Brain. The Fumes of it, received at the Mouth, are often found ſucceſsful in beginning Quinſys, a Falling-down of the Uvula, or Swelling of the Tonſils from a Catarrh.

The Preparations of Amber are, firſt, Prepared Amber, properly ſo called; which conſiſts in reducing it to an impalpable Powder upon the Porphyry, and this Powder is much preferable to the Magiſtery of Amber. Secondly, the Tincture of Amber, with tartariz'd Spirit of Wine, which may be taken from a few Drops to a Drachm. With this Tincture is made the volatile oily ſuccinated Salt; by mixing equal Parts thereof, and of the common volatile oily Salt, and then digeſting them in a gentle Heat. This new Tincture is Cordial and Diaphoretick, and of ſurprizing Efficacy in ſleepy Affections, Catarrhs, Hyſterical Diſorders, Palpitation of the Heart, Fainting, Obſtructions of the Menſes, and Palſies. The Doſe is from a few Drops to a Drachm, in Tea, Wine, or any other convenient Liquor.

Externally, the Sutures of the Cranium, the Nares and Temples, are anointed with it in Catarrhs; the *Scrobiculum Cordis*, in Faintings, and Palpitations,

pitations; and the umbilical Region in Hyſterical Affections.

The Third Preparation from Amber, is a volatile acid Salt, a yellow Oil, and a black fœtid Oil. The volatile Salt is diuretick, and eſteemed a Specifick in hyſterical, convulſive, and ſpaſmodick Complaints, taken from ten Grains to half a Drachm; and with that is prepared the ſuccinated Liquor of Hartſhorn of *Michael*, very much recommended in the epileptick Fits of Children. This Liquor is made by diſſolving as much Salt of Hartſhorn and Salt of Amber in Spirit of Hartſhorn as the Menſtruum will take up. The Oil is uſeful in hyſterical, cephalick, and nervous Complaints, taken inwardly, from two to twenty Drops. Externally, it is uſed in the Gout, Palſy, and Catarrh, by rubbing it into the Part affected; with it is prepared the ſuccinated Balſam of Sulphur; and it is an Ingredient in the *Emplaſtrum Magneticum* of *Angelus Sala.*

Amber is an Ingredient in the *Trochiſci de Carabe*, in *Crato's Pilulæ de Succino*, in *Charas*'s Stomach Plaiſter, and in his diaphoretick and Styptick Plaiſters.

ART. IV. *Of Jet, and Foſſil Coal.*

JET, or the Black Amber of the Shops, is a bituminous, dry, hard, black, ſmooth, ſhining Subſtance, which burns almoſt like Pitch, ſending out a black thick Smoak, and a bituminous Smell. It had its Name, *Gagates*, from a Town in *Lycia* called *Gage*, or *Gagis*, and is now found among the Rocks in many Countries in *Europe*; ſuch as the Province of *Narbonne* in *France*, in *Germany*, *Sweden*, *Ireland*, &c. It ſeems to me to differ from Foſſil Coal in the Purity and Fineneſs of its Parts; for Coal is more groſs, and leaves a greater Quantity of earthy Parts after Calcination. It differs from

Bitumen in that it is not fusible by Fire, and is often observed to be covered with a kind of Vitriolick Dust in the Places where it is found.

By Distillation, Jet affords a white and subacid Spirit, or Phlegm, then a black Oil, and next a butyraceous Substance, or thick gross Oil, leaving a black *Caput Mortuum* of a rare Texture, at the Bottom of the Vessel.

Diascorides attributes to Jet an emollient, discutient Virtue. In Fumigations, it is proper for a Suffocation of the Uterus; and *Aetius* writes, that Wine, in which burning Jet has been quenched, presently relieves those who are afflicted with the Heart-burn, and that it causes Sweat, and increases the Motion of the Blood. The Chemical Oil is proper to be smelled to in hysterical Disorders.

To Jet may be referred the Fossil Coal, concerning which *Diascorides* says he had been informed that the Fire made of it was increased by Water, and extinguished by Oil; the Truth of which we see every Day in Blacksmith's Forges, who sprinkle Water on their Coal Fires, to prevent the Dissipation of the Flame, and to concentrate the Heat, or confine it to one particular Place, and thereby to make it more intense. This Coal is of no Use in Physick, but an Oil may be extracted from it, resembling that of Jet in Nature and Virtues.

CHAP.

CHAP. III.

Of Sulphur.

THE Sulphur of the Shops, called θεῖον in *Greek*, becauſe uſed in all Expiatory and other Sacred Rites, is a mineral, concreted Juice, ſolid, dry, friable, fuſible by Fire, and very eaſily inflammable. The Flame it emits is blue, and the Smell of burning Sulphur is ſtrong, ſubtile, acid, and very prejudicial to the Lungs.

Sulphur is of various Kinds; it is, in the firſt place, divided into ἄπυρον, or Native Sulphur, which has never been expoſed to the Fire; and ἐμπυρόμενον, or Factitious Sulphur, prepared by Fire. It is either of a yellow, yellowiſh, aſh, or light Colour, and either Pure or Impure in Subſtance.

Native Sulphur, termed *Sulphur Vivum* in *Latin*, is of two Kinds; one pellucid, and ſhining like Gold, and either of a citrine or greeniſh Colour. This is found about the Gold Mines in *Peru*, in *Switzerland*, and many other Places. The other is opake, found either in hard, ſolid, ſhining, greeniſh or yellow Lumps, or in Form of a clayiſh Glebe, of a light aſh Colour, or yellow. This Kind is dug near all the Burning Mountains, near ſome ſulphureous Springs, and in ſeveral other Places of *Europe* and *America*.

Factitious Sulphur is prepared in different Manners. In ſome Places it is obtained by boiling of Water, and at *Buda* in *Hungary*, according to *Agricola*, it is evaporated along with the Water of the Mineral Springs, and concretes in the Covering, or Dome of theſe Fountains, like Flower of Brimſtone, and is gathered from thence, once every Year, with great Care. It is likewiſe extracted from a ſort of aſh-coloured argillaceous Earth. Thus in

some Places of *Italy* there are Mines out of which a fat, white, argillaceous Earth is dug, mixed with some blackish Veins; and this Earth being put into very capacious earthen Vessels, and distilled, the melted Sulphur runs out at the *Rostrum* of the Alembic into a Receiver, where it soon concretes into large Lumps. After the Distillation is over, a red Earth remains, which is thrown away, as useless. Sulphur is likewise often extracted from a kind of Pyrites, especially near *Liege* in the *Low-Countries*, where there is a kind of Pyrites like Lead Oar, which being dug up, is broken into small Pieces, and then thrown into very large Crucibles, or rather earthen Cucurbits of a quadrilateral Figure, with a narrow Orifice. These Vessels are placed in proper Furnaces, in an inclined Position, whereby the Sulphur contained in these Stones, being melted by the Fire, runs into Leaden Vessels filled to a certain Height with Water, where it concretes immediately; the Substance which remains in the Cucurbit, containing a large Proportion of Vitriol. If by this first Operation, the Sulphur be not sufficiently pure and clean, it is melted a second time in Iron Vessels, and boiled with the Addition of a certain Quantity of Linseed Oil. Afterwards it is made up, either in large Lumps, or is thrown into hollow Cylinders of Iron rubbed over with Oil on the Inside, and so is formed into Rolls.

Sulphur so prepared is called common Brimstone, or common Sulphur, and is of two Kinds, Yellow, or Greenish; which last is preferred for the Extraction of Oils or Sulphurs from other Bodies, as containing the greatest Quantity of Vitriolick Salt. Common Sulphur melts by Fire, is easily inflammable, emitting a fine blue Flame, with acid Effluvia, which, affecting the Nostrils and Lungs, excite Coughing; an electrical Quality is likewise observed in it. It is not soluble by Acids, but very readily by alcaline or oily

oily Subſtances. When fired in the open Air, it flies almoſt all away, a ſmall Portion of a kind of Metallick Earth only remaining; but if the Vapour that aſcends from burning Sulphur be collected with Care, it becomes an acid Liquor, of the ſame Nature with Spirit of Vitriol, without any apparent Mixture of oily or bituminous Parts; but if Sulphur be diſtilled in an Alembic, or any other cloſe Veſſel, the Vapour does not then turn to a Subſtance of a different Kind, but concretes in Form of a yellow, ſooty Duſt, called Flowers of Sulphur, which is of the ſame Nature as it was before Diſtillation. Therefore, as Sulphur cannot be reſolved into its different Principles in cloſe Veſſels, the Diſtillation of it remained very imperfect, till M. *Homberg* put the finiſhing Hand to it. His Method, as explained in the *Memoirs of the Royal Academy of Sciences*, for the Year 1703. is this:

Take of Flower of Brimſtone, four Ounces; Oil of Turpentine, a Pound: Digeſt them in a Matraſs over a Sand-Heat for eight Days, till the Sulphur is diſſolved, the Liquor appearing of a dark red Colour. Then if the Solution be ſet in a cool Place, in a Veſſel cooled by Art, about three fourth Parts will turn to yellowiſh Cryſtals, the other fourth Part remaining diſſolved in the Liquor. The Cryſtals being ſeparated from the Tincture, let a Pound of freſh Oil of Turpentine be poured upon them, and thus continue to repeat all the Parts of the Operation till the Flower of Sulphur be quite diſſolved. Mix all the Tinctures together, and diſtil them in a large Glaſs Retort over a gentle Fire; the greateſt Part of the Oil of Turpentine will come over limpid, together with a ſmall Portion of a whitiſh and very acid Liquor; but as ſoon as the Drops from the Neck of the Retort appear red, change the Receiver, and increaſe the

Fire by Degrees, till nothing more will come over. Near the End of the Operation, a thick browniſh Oil will appear, mixed with a ſmall Portion of a whitiſh acid Liquor. In the Bottom of the Retort is found a black, rare, ſpungy Earth, or Caput Mortuum, *in ſome meaſure foliaceous, ſhining, inſipid, and remaining fixed in the moſt vehement Degree of Fire. Let the thick, dark-coloured, and bituminous Oil, be put into another Glaſs Retort, and when the Remains of the Oil of Turpentine, and of the white acid Liquor, are all drawn off by a very gentle Heat, red Drops will begin to ariſe: Then immediately remove the Fire, and upon the bituminous Matter in the Retort pour rectified Spirit of Wine, which being drawn off again in a gentle Heat, will have a very fœtid Smell: Pour freſh Spirit on the Remainder, and continue this Proceſs, till the Spirit that comes off has loſt all its unpleaſant Smell; and the Black Matter which then remains in the Retort will ſmell agreeably enough, and is the true bituminous and inflammable Part of Sulphur.*

It is here to be obſerved, that only a certain Portion of this bituminous Subſtance is diſſolvible in Spirit of Wine, another Part remaining which is ſoluble neither by that Spirit, nor by any lixivial Liquor, but only by eſſential diſtilled vegetable Oils. This indiſſoluble Subſtance is a ſtrong Cathartick given in the Quantity only of two or three Grains; but that Portion which yields to Spirit of Wine is an excellent Balſam for the Lungs.

By this Analyſis, three very different Subſtances are obtained from Sulphur almoſt in equal Quantities; one acid, the ſecond bituminous, and the third earthy and fixed. The acid Liquor is not different from Spirit of Vitriol, and when ſaturated with Salt of Tartar, is formed into Cryſtals, exactly like

like thoſe of vitriolated Tartar. This Similitude of theſe two Liquors is farther confirmed by the artificial Production of Sulphur, either by reuniting the different Subſtances extracted from Sulphur, or by the Mixture of other Subſtances analogous to the former. Thus, if the white acid Liquor, or the Spirit of Sulphur, or Spirit of Vitriol, be mixed with the bituminous Portion of Sulphur, or with any other Bitumen, or Oil, or Fat; and theſe Mixtures be diſtilled with Salt of Tartar, a ſaline Maſs will remain in the Retort, partly yellow, and partly red, from which common Brimſtone may be obtained by Separation.

This Artificial Sulphur may be made in an eaſier Manner, by *Pouring upon Vitriol the fixed Salt of Vitriol, vitriolated Tartar,* Sal Mirabilis Glauberi, *Alum, or any other vitriolick Salt, melted in a Crucible, the diſtilled or expreſſed Oil of Vegetables, the Fat of Animals, any mineral Bitumen, or even Spirit of Wine, to the Point of Saturation; For ſoon after the Affuſion of theſe inflammable Liquors, a bluiſh Flame appears, and blue-coloured Fumes are ſeen to ariſe in the Crucible. If at that Time the ſaline Maſs be taken out of the Crucible, and diſſolved in Water, and diſtilled Vinegar be poured on the Solution, the Liquor turns white, like* Lac Sulphuris, *and a greyiſh or yellowiſh Powder falls to the bottom, which is true genuine Sulphur.*

Diaſcorides writes, that Sulphur is good in Coughs, when mixed with an Egg; and *Hippocrates* uſed it in hyſterical Affections accompanied with Coughing, by way of Fumigation, ſometimes alone, and ſometimes mixed with other Subſtances. The internal Uſe of Sulphur is recommended by Phyſicians in Diſeaſes of the Lungs, of which it is, by way of Emi-

Eminence, termed *The Balſam*; becauſe it promotes Expectoration, and clears and ſtrengthens that Organ; and is therefore very beneficial in a Phthiſis, Aſthma, and Catarrh. It has in all Ages been a famous Medicine in cutaneous Diſeaſes, Scabs, *Pſoræ*, &c. uſed inwardly or outwardly. Externally applied it diſcuſſes hard Tumours, ripens and digeſts Buboes, but no Medicine prepared with Sulphur is thought to be agreeable to Women with Child, becauſe it is apt to cauſe Abortion. Inwardly taken, it is laxative, and promotes inſenſible Perſpiration, as may be perceived by the ſulphureous Smell of ſuch Perſons as have taken it, and by the browniſh or black Colour which it gives to the Gold or Silver they carry about them. It is therefore very quickly and readily diffuſed through the whole Body, and by its balſamick Parts it blunts and intangles the acrid Salts, with which the Fluids abound in theſe Diſeaſes; and thus reſolves their native, mild, ſoft, and oily Qualities; by which Means it readily cures ſmall Ulcers in the Lungs and Skin.

Though Sulphur may be given inwardly, even in a groſs Powder, yet it is ſeldom ordered without ſome Preparation. It may be purified different Ways: Some put it into Water with melted Wax, which ſwims at the Top while the Sulphur falls to the Bottom; and by repeating this Mixture till the Sulphur begins to acquire a red Colour, it is then thought to be more defecated. Some boil it in Water for ſeveral Days, changing the Water every now and then; and afterwards they ſet it for two Hours in hot Smoak that ſome Fumes may exhale, and the remaining pale yellowiſh Sulphur they judge to be very pure. Others make Milks and Magiſteries of Sulphur, which they think much preferable to common Sulphur; but all theſe Preparations either change the true Nature of Sulphur, or elſe are of no Effect at all. The beſt way to purify it is by Sublimation, or

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the Reduction of it to Flower, by which common Method it is freed from the earthy or metallick Parts that may have been mixed with it.

Sulphur thus prepared may be ordered in the Diſeaſes already mentioned, in the following Manner:

Take Flower of Brimſtone, four Ounces; Sugar of Roſes, one Ounce; Syrup of Maiden-Hair, a ſufficient Quantity to make a ſoft Opiate; of which three Drachms, or half an Ounce, are to be taken every Morning faſting, and every Evening, at the greateſt Diſtance between Meals, for a long Continuance of Time, in the Scabies *and Aſthma.*

Take Flower of Brimſtone, an Ounce; white Sugar, four Ounces; Roſe-Water, a ſufficient Quantity: Boil them according to Art, and make them into Tablets or Lozenges; to be taken at a great Diſtance from Meals, in Coughs, Conſumptions, and Aſthmas.

Take Flower of Brimſtone, two Drachms; mix it well in a potched Egg, and ſwallow it early in the Morning faſting, and repeat it again in the Evening, for the Itch, rubbing the Body with the following Ointment:

Take the Roots of wild ſharp-pointed Dock, and Elecampane, of each two Ounces; freſh Butter, four Ounces; Flower of Brimſtone, an Ounce and half. Mix them together, and make them into an Ointment.

As the powerful Acid contained in Sulphur is very prejudicial to the Lungs, Chemiſts, in order to make it a more ſafe, and equally efficacious Medicine, have endeavoured to mitigate or inviſcate that acid Salt, by the Preparation called *Balſam of Sulphur*, for which,

which, on any Quantity of Flower of Brimſtone, they pour as much Oil of any Kind as will ſwim three or four Fingers Breadth above it, and then digeſt them in a gentle Sand Heat, till the Oil begins to look red or brown. This Liquor, when cold, is ſeparated from the Fæces, and kept for Uſe. In this Manner are the different Balſams of Sulphur prepared; ſuch as the *Balſamum Aniſatum*, *Fœniculatum*, *Terebinthinatum*, *Juniperiſatum*, *Succinatum*, ſo called from the different Oils made uſe of. The Doſe is from ten Drops to thirty, in Aſthmas, immoderate Coughs, Ulcers in the Lungs, Nephritick Pains, and Ulcers in the Kidneys and Bladder. From this Balſam are prepared the Balſamick Pills of *Morton*, which in ſuch ſlow ſcorbutick or ſcrophulous Phthiſes, are attended with a very ſmall Fever, if any at all; and where the expectorated Matter is glutinous, as in an Aſthma, are very beneficial, both in the Beginnings and ſubſequent Stages of the Diſeaſe.

Take Powder of Millepedes, three Drachms; Gum Ammoniac, well purified, a Drachm and an half; Benjamin-Flowers, two Scruples; Extract of Saffron, and Balſam of Peru, *of each ten Grains; Terebinthinate Balſam of Sulphur, a ſufficient Quantity: Mix and make into Pills, which muſt either be gilt, or rolled in Powder of Liquoriſh. The Doſe is fifteen or eighteen Grains, to be repeated three times a Day, at Medical Hours.*

But the beſt Balſam of Sulphur that has ever been prepared is undoubtedly that of the great M. *Homberg*, made by *Extracting a Tincture with Spirit of Wine from the bituminous Part of Sulphur, freed from all its acid and earthy Parts. This Tincture, evaporated over a gentle Fire to the Conſiſtence of a Syrup, is the genuine Balſam of Sulphur*,

phur, and of excellent Uſe, not only in Diſeaſes of the Lungs, but in all Diſorders in which the animal Functions are diſturbed by acrid Salts in the Fluids. It is taken, a few Drops at a time, in any Syrup, or licked from the Palm of the Hand.

Chemiſts extract the acid Salt of Sulphur from the bituminous Part, in Form of a Liquor, called Spirit of Sulphur; and among all the different Methods of doing this mentioned by M. *Homberg*, in the *Memoirs of the Royal Academy* for 1703, the following is the beſt.

Take of Citrine, or greeniſh Sulphur, ten or twelve Pounds; melt it in a large Crucible, or any other Earthen Pot, till it takes Fire; then ſet it on an inverted Crucible, in a broad Earthen Diſh; and, having provided a large Receiver, with a wide Neck, about ſix Inches in Diameter, ſuſpend it ſo as that it may receive within its Orifice the Crucible which contains the burning Sulphur. The acid Fumes of the Sulphur are thus collected by the Humidity of the Air in Drops which ſtick to the Sides of the Receiver, and from thence trickle down through the Orifice into the Earthen Diſh. This acid Liquor is termed the Spirit or Oil of Sulphur.

Concerning this Operation, we muſt obſerve, 1. That two Crucibles ought always to be in Readineſs, that, in caſe the Flame ſhould be extinguiſhed in one, the other, ſtill burning, may be put in its Place. 2. The Cruſt which is always formed on the Surface of burning Sulphur, is to be taken off with Care, leſt it ſhould check the Flame too ſoon. 3. That the greateſt Quantity of the acid Spirit is obtained in moiſt, rainy, cloudy, cold Weather. 4. That

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in this Method of extracting it, more Spirit is obtained than by any other, a Pound of Sulphur sometimes yielding an Ounce and an Half.

This Spirit of Sulphur is proper in Burning, Malignant, and Pestilential Fevers. It quenches Thirst, prevents the Putrefaction of the Fluids, and calms the Effervescence of the Blood and Bile, not by coagulating the whole Mass of Fluids, as the other mineral acid Liquors, but only by intangling the sulphureous Parts; for, according to *Borelli*'s Observation, a Drachm or two of Spirit of Sulphur injected into the Jugular Vein of a Dog, did not kill the Animal; but the same Quantity of *Aqua Fortis*, even diluted with Water, throws a Dog into terrible Convulsions, of which he soon dies; and upon opening his Body, the whole Blood contained in the Veins and Heart is found in grumous Clots. Moreover, Spirit of Sulphur attenuates gross viscid Humours, and thereby often removes Obstructions; whence it is recommended by some in Asthmas; however, I do not think it proper for phthisical People, because, like other acid Liquors, it excites Coughing. It is given only in a few Drops at a time, sufficient to give a grateful Acidity to any proper Vehicle; and by repeating this Dose at the Beginning of every Paroxysm, Intermitting Fevers are often cured by it.

Spirit of Sulphur, either by itself, or mixed with Honey of Roses, cures simple *Aphthæ* in a very small Time, provided there be no Inflammation, by only touching these little Ulcers with the Spirit or Mixture, imbibed by a bit of Cotton or Linnen Rag. *Riverius* is of opinion, that it is an excellent Remedy in Putrid Fevers; and that it is found, by Experience, to cool, open, resist Putrefaction, prevent the Inflammability of the Fluids, quench Thirst, *&c.* But it is never to be given in Pleurisies, Peripneumonies, Spitting of Blood, Phthisis, and other Diseases

of

of the Lungs, except the Obſtruction ariſes from a thick, pituitous Matter, in Inflammations of the Stomach, Dyſentery, Bloody Urine, and Ulcers of the Kidneys and Bladder.

CHAP. IV.

Of Arſenical Juices.

ARSENICAL Subſtances are nearly allied to Sulphur, and have likewiſe ſome Affinity to Metals. They agree with Sulphur in being diſſolved by Oil, in being eaſily inflammable, and in emitting a ſulphureous Smell while burning; though this Smell comes nearer to that of Garlick, and is very hurtful. Laſtly, they agree with Sulphur in being eaſily ſublimed, or raiſed into fine Flowers, without leaving any conſiderable Quantity of the Metallick Part behind. Theſe Subſtances likewiſe partake ſomething of the Nature of Metals, eſpecially of Mercury; for they either naturally do, or may be eaſily made to, ſhine like Metals; they often leave a Metallick Part after Evaporation, and by the Fumes of them Copper may be turned white, in the ſame Manner as by thoſe of Quickſilver.

The Word *Arſenick* was taken by the Antients in a more extended Senſe than by the Moderns. It was uſed by *Diaſcorides* for two different Subſtances, one of which is the ſame with our Orpiment, or Yellow Arſenick; the other was Red, reſembling Sandaracha, but we do not know preciſely what it was; for he diſtinguiſhed it from Sandaracha, though at the ſame time he owns that in outward Appearance they differed only in the Degrees of Redneſs, which in what he calls Arſenick was deeper, and more like

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the Colour of Cinnabar. The *Arabians* mention only two Kinds of Arſenick; the Yellow, which is the ſame with our Orpiment; and the Red, which they called alſo *Realgar*; but they confounded the Red Arſenick of *Diaſcorides* with the Sandaracha of that Author. It is however to be obſerved, that there is a great Difference between the Sandaracha of the *Greeks*, and of the *Arabians*. That of the *Greeks* was an arſenical, poiſonous Subſtance; but that of the *Arabians* is the Gum of the Juniper Shrub, commonly called Varniſh; and this Diſtinction is carefully to be rememberd in the Compoſition of Medicines.

The Moderns, taking Arſenick in a more limited Senſe, underſtand by it only *Auripigmentum*, or Orpiment. The White and Red Arſenick they ſometimes name *Realgar*, and the latter they likewiſe call Sandaracha. We ſhall divide Arſenical Subſtances into three Claſſes; the Firſt taking in Orpiment; the Second Realgar; the Third Arſenick, properly ſo called.

Art. I. *Of Orpiment.*

THE Orpiment of the Shops, *Auripigmentum* in *Latin*, Ἀρρενικὸν of *Diaſcorides*, Ἀρσενικὸν of *Galen*, *Naructh* of *Serapion*, *Zarnich Arfar* of the *Arabians*, and *Orpiment* or *Orpin* in *French*, is an arſenical Juice, in ſquammous or foliaceous Glebes, like the *Lapis Specularis*; the *Squammæ*, or *Strata*, being eaſily ſeparable from each other.

Orpiment is of three Kinds; one of a Gold Colour; the ſecond of a deeper Red, or Cinnabarine Colour, mixed with Yellow; and the third, greeniſh and yellowiſh, mixed with a large Proportion of Earth, and therefore the leaſt valuable. Theſe three Kinds are found in the Veins of Gold, Silver, and Copper Mines; but we know not what was the other

other Kind of Orpiment, mentioned by *Diaſcorides.*

Orpiment is of an acrid Taſte, ſoluble in Oil, and inflammable by Fire, emitting a thin Flame, with a great deal of Smoak, ſmelling ſtrongly of Sulphur or Garlick. This Smoak, if collected, turns to yellowiſh Flowers, like Sulphur, and a red, or blood-coloured Maſs remains behind; which, when cold, concretes into a hard ſolid *Regulus*, like Cinnabar, called by ſome Red Orpiment, or Realgar. If the Orpiment be kept in a ſubliming Veſſel for a long time on the Fire, the whole Maſs is raiſed to the upper Part of the Veſſel, and there concretes into a beautiful, red, pellucid Subſtance like a Ruby, only a ſmall Quantity of Metallick Earth remaining at the Bottom. The firſt Fumes, which come from this Regulus, will turn Copper white and brittle.

Orpiment therefore muſt conſiſt of the ſame Parts as common Sulphur, with ſome Mineral Particles mixed with them; or, it is compoſed of an acid Salt intangled in Particles of Mercury, and of a bituminous Subſtance. Its Corroſive Quality ariſes from the acid *Spicula* ſtuck into the Particles of Mercury; but it has that Quality in a leſs Degree than Corroſive Sublimate, becauſe of its bituminous Part. It is leſs inflammable than Sulphur, becauſe the Energy of the acid Salts contained in it is weakened by the Mineral Parts; and from its Corroſive Quality it is deſervedly reckoned among the Poiſons.

It was anciently uſed by Phyſicians to eat away fungous Fleſh, but is now laid aſide in that Intention, Chemiſtry having furniſhed us with much better Cathereticks. It is uſed ſometimes by Barbers, with a Mixture of Quick Lime, as a Depilatory to eradicate the Hairs of any Part of the Body; but if they let it lie on too long, it corrodes the Skin. Some Phyſicians recommend the internal Uſe of Orpiment in Subſtance, in a purulent Phthiſis accom-

panied with Expectoration, and in Aſthmas. The Fumes of it may likewiſe be received at the Mouth in the ſame Intentions, and the *Chineſe* reckon it among the Purgative Medicines. However, I cannot think the inward Uſe of this Medicine in any reſpect allowable; for it is a ſtrong Poiſon, deſtructive to the Nerves, and accordingly is found by Experience to bring on very terrible Symptoms, ſuch as Spaſms in the Hands and Feet, Stupors and Contractions, Cold Sweats, Palpitations of the Heart, Faintings, Thirſt, inward Burning, Vomiting, Belly-Ach, Eroſions, violent Pains, and Death itſelf, according to the different Doſes of this Poiſon; and in the Bodies of ſuch as die in this Manner, the Oeſophagus, Stomach, and Inteſtines are found to be inflamed, corroded, and perforated in ſeveral Places.

The Antidotes for Orpiment, and all other Arſenical Subſtances, are whatever is able to blunt the Acrimony of theſe corroſive Medicines; ſuch as Milk and Oil drank in great Quantities, fat Broths, the Juice of Mallows, or Marſh-Mallows, Decoctions of Flea-wort, and Linſeed, Marſh-Mallow Roots, and ſuch like. Orpiment or Arſenick worn about the Neck like an Amulet, cannot be ſo hurtful as ſome imagine, neither do we believe it of any Virtue in preſerving againſt the Plague or peſtilential Diſeaſes.

Of the *Lixivium* of Orpiment and Quick Lime is made the Sympathetick Ink, by the Effluvia of which alone, Letters wrote with Vinegar of Lead become viſible; and the Painters uſe it for Gold Colours, from which Uſe its Name is derived.

ART. II.

Art. II. *Of Realgar.*

REALGAR, or *Liſagallum* of the Shops, Σανδαράχη of the *Greeks*, *Realgar*, *Leſegal*, and *Zarnich Ahmer* of the *Arabians*, called by us Red Orpiment, is an Arſenical Juice, of the ſame Nature with Orpiment, differing from it only in Colour. It is of two Kinds, Native and Factitious. The Native Realgar is dug out of the ſame Mines with Orpiment, being of a cinnabarine Colour, and ſmelling like Sulphur and Garlick when burnt, and made up in ſolid brittle Glebes. The Factitious Kind is made of Orpiment melted and boiled for ſome Time in ſubliming Veſſels, by which the Yellow Flowers are raiſed to the upper Part of the Veſſels, and the Maſs remaining at the Bottom, being condenſed by Cold, becomes of a red Colour, like Cinnabar, and is called Realgar; which, if it be expoſed to the free Air for a long Time, becomes covered with a ſaline Efflorescence. This Realgar is not to be confounded with the Factitious red Arſenick, of which we ſhall treat in the following Chapter.

Realgar is brought from *China* in different Figures; ſome of which reſemble the Figures of little Men, called *Pagods*, and I am of opinion that it is not cut into theſe Figures, but caſt in Moulds.

Realgar is no leſs poiſonous than Orpiment. According to *Diaſcorides*, Sandaracha has a ſeptick and corroding Virtue; but it is wonderful, that he ſhould recommend the Uſe of it not only in Fumigations for Coughs of long ſtanding, but alſo taken inwardly, mixed with Reſin for Aſthmas, with Honey for a Hoarſeneſs, or a ſpitting up of a purulent Matter. Even *Hippocrates*, in a Suffocation of the Uterus, accompanied with a Cough, orders the Weight of an *Obolus*, or about twelve Grains, of Sandaracha, mixed with the ſame Quantity of unprepared Sulphur,

and three or four blanched Almonds, to be taken in ſweet or perfumed Wine. The *Indians* commonly drink Wine or Water out of Arſenical Cups for various Diſeaſes, as a ſovereign Remedy; though among us, this Practice has been found to be attended with very bad Conſequences. It muſt be owned therefore that the Bodies of Men in hot Countries are different from ours. As the inſenſible Perſpiration is there more copious, their ſolid Fibres are drier, and more unfit for Motion, and for that Reaſon require more ſtrongly irritating and ſtimulating Medicines to make theſe Fibres contract as they ought. Likewiſe, as the Fluids in their Bodies are thicker and more viſcid than in ours, by the Evaporation of the more fluid Parts of them, they cannot be attenuated but by ſtrong and very acid Medicines; and therefore what is a certain Poiſon to us, is to them an efficacious Remedy; as the Cathartick Medicines which we uſe have hardly any Effect on them, except they be given in three times the common Quantity, as has been often obſerved by Phyſicians. In our Climate therefore we ought to abſtain from the inward Uſe of theſe Medicines however prepared, corrected or mitigated, becauſe they ſtill retain ſome Part of their deleterious Qualities, and prove fatal in tender Conſtitutions of the Viſcera. Neither is the external Uſe of them altogether ſafe, for *Fernelius* relates that by applying a large Quantity of Arſenick to a cancered Breaſt, the Patient was carried off in ſix Days. About three Hours after the Medicine was applied, ſhe was ſeized with a Shivering, Vomiting, Pain in her Head, and frequent Fainting. Her Pulſe was weak, and as the Symptoms increaſed by Degrees, ſhe began to be cold in the Extremities of her Body, and then her Face and other Parts ſwelling beyond meaſure, ſhe ſoon died. From this Obſervation, *Fernelius* takes Occaſion to caution Phyſicians againſt the External Uſe of Arſenical Medicines,

Medicines, except in ſmall Quantities, and to Parts at a great Diſtance from the Heart and Brain, though in the Opinion of many very great Phyſicians they are thought to be very powerful and efficacious Remedies in cachectick, phagedenic, and carcinomatous Ulcers.

The Correction of Realgar, firſt propoſed by *Helmont*, and afterwards publiſhed by *Dallicot*, firſt Phyſician to the Duke of *Lorrain*, which has been found ſucceſsful in many Caſes, is this:

Put any Quantity of Realgar, finely powdered, into a Glaſs Matraſs, and pour upon it as much of a ſtrong Lixivium of Tartar aad Nitre as will ſwim four Fingers breadth above the Realgar. Digeſt them in a Sand-heat for twenty-four Hours, ſhaking the Matraſs very often. Then pouring off and preſerving the Tincture, pour new Lixivium upon the Powder, and repeat the whole Operation, till almoſt all the Realgar is diſſolved, ſome indiſſoluble metallick Parts only remaining. Afterwards mix all the Tinctures together, paſs them through Cap Paper, and pour at ſeveral times as much Vinegar of Lead to the ſtrained Liquor, as will precipitate all that can be ſeparated from it. Then, pouring off the clear Liquor from the Precipitate by Inclination, let the Powder be waſhed with warm Water till it become almoſt inſipid, and when it is well dried, burn a ſufficient Quantity of rectified Spirit of Wine upon it, and then calcine it with the Tincture of Opium extracted with Spirit of Wine. This Powder ſo prepared is a gentle Eſcharotick, of great Service in cancerous Swellings.

ART. III. *Of Arsenick, properly so called.*

ARSENICK properly so called, is a Substance extracted from an Oar found in *Saxony* and *Bohemia*, named *Cobalt*. It is of three Kinds, Crystalline, Yellow, and Red; and as this Original of Arsenick, and the Way of preparing it, are not commonly known, I shall here shew what is the Nature of Cobalt, and in what manner Arsenick and the other Substances found with it in the Oar, are extracted, also what are the Kinds of Factitious or Artificial Arsenick.

German Cobalt of the Shops, *Cadmia Metallica* of *Agricola*, is a ponderous, hard, fossil Substance, almost black, not unlike Antimony or some Kinds of Pyrites, emitting a strong sulphureous Smell when burnt, often mixed with Copper, sometimes with Silver. It is dug out of Mines in *Saxony*, near *Goslar*; in *Bohemia*, in the Valley of *Joachim*; and in *England* in the *Mendip* Hills, in great Quantities. It has so strong a Corrosive Quality as sometimes to burn and ulcerate the Hands and Feet of the Miners, and is a deadly Poison for all known Animals. All the three Kinds of Arsenick are extracted from it, and it likewise serves to make *Zaffera*, used by Potters in giving a blue Colour to their Vessels; and the *Encaustum Cæruleum*, or that Kind of Blue sometimes used by Painters, and often by Women to mix with Starch for whitening and stiffening Linen. The way of making all these, is taught by *Runkelius* in his Art of making Glass. To this Purpose they put the Cobalt in a calcining reverberating Furnace, made for that Purpose in such a manner as that the Flame may just graze upon the Oar, and so set it on Fire. The Flame of the Oar is blue, accompanied with a copious Smoak which is received on the Ceiling of the Furnace, and from thence conveyed

out

out through a large Funnel made of Boards, and above a hundred Ells in Length, but the greateſt Part of it ſticks to the Inſide of the Funnel, in Form of a whitiſh Soot; and every ſix Months the Labourers ſweep the Funnel with Brooms, and carefully preſerve this Soot, which afterwards ſerves to make both Cryſtalline, Yellow, and Red Arſenick.

Cryſtalline Arſenick is made only by ſublimating the Soot in Iron Veſſels into an opake Subſtance, ſometimes white and ſhining like the *Encauſtum Album*, ſometimes ſtreaked with Red and Cryſtalline Veins.

Yellow Arſenick is made of the ſame Soot ſublimed with common Sulphur, in the Proportion of one Part of Sulphur to ten of Soot. The ſublimed Maſs is of a yellow Colour ſolid like Sulphur, ſhining, and not altogether opake, eaſily broken, but not friable, or eaſily crumbled into Duſt; and diſtinguiſhable from Orpiment by not taking Fire when thrown upon burning Coals, as Orpiment preſently is.

Red Arſenick is made of the ſame Soot and Sulphur, mixed with a ſmall Proportion of a Metallick Subſtance called the *Spuma* of Copper. The ſublimed Maſs is ſolid, of a Cinnabarine Colour, and opake.

The calcined Cobalt, after the Evaporation of the Fumes or Smoak, is powdered and calcined again; and this Operation repeated till the Calcination is judged to be perfect. Then being very finely powdered, it is mixed with two or three times the Quantity of powdered Flint Stones, and moiſtened with a little Water in large Tubs, where, in a very ſhort time, it becomes a ſolid firm Maſs, called *Zaffera*, as already ſaid, which is uſed by the Potters, Glaſs-Men, Enamelers, *&c.*

If two Parts of calcined Cobalt, one Part of Pot-Ash, and three of common Sand, be melted together, a vitreous, opake, bluish Mass is produced, which is ground in Mills to a very fine blue Powder, which is called Smaltum, *or* Encaustum Cæruleum, *used by Painters, and in washing Linnen.*

Arsenick consists of an acid Salt, and a kind of Mercurial or Metallick Substance, which discovers itself when it is distilled in a Retort, mixed with Soap, Suet, Oil, or any fat or oily Substance; for with a strong Degree of Fire the Arsenick will be raised into the Neck of the Retort in a Metallick Form, like Antimony. The Sulphur contained in Arsenick is in so small a Proportion, that it does not flame when cast on burning Coals, though Cobalt contains a great Quantity of Sulphur; which consequently has been separated from the Arsenical Parts in the Calcination and Deflagration, and so evaporated; but the Smell of Arsenick proves that some Sulphur still remains in it. Arsenick is very volatile, for if any Quantity of it is put into a Crucible, and set over the Fire, it will presently evaporate in white Fumes, without leaving any Remainder. If melted, stratified, or cemented with Copper, it turns it of a Silver Colour; but as it impairs its Ductility, this Change of Colour is rendered of no Use.

Arsenick is a powerful Corrosive, and reckoned among the strongest Poisons. When taken inwardly, it causes many bad Symptoms, of which some are common to it with other Poisons; such as Anxieties, Swoonings, Palpitations, a sudden Dejection or Sinking of the Strength and Spirits, Stupors, Deliriums, convulsive Motions of the Limbs, Palsies, Heat and Corrosion of the Fauces, Thirst, Fevers, Vomiting, Pain in the Stomach, cold Sweats, *&c.* Other Sym-

Symptoms are peculiar to this Poiſon; ſuch as not only an Eroſion of the Stomach, but an Extenuation of it, in ſuch a manner as that all its Coats taken together ſhall not be thicker than a Poppy Leaf in many Places, and at the ſame time the ſmall Inteſtines are found corroded and perforated; a ſudden Swelling and Sphacelation of the Parts of the Body; and after Death a more ſpeedy Putrefaction than is obſerved in other Caſes, eſpecially in the Parts of Generation belonging to Men. If Death does not immediately follow, the Patient becomes afflicted with an Hectick Fever, Maraſmus, Palſy, Tremors, and ſometimes Madneſs. Some recommend Rock Cryſtal reduced to an impalpable Powder, as an Antidote againſt Arſenick, but I ſhould depend much more on drinking large Quantities of Milk, Oil, or fat Broths, while the Poiſon remains in the *Primæ Viæ*; but after it has got into the Blood, alexiterious Medicines are to be uſed, ſuch as *Venice* Treacle, Mithridate, Bezoar, Powder of Vipers, Contrayerva Root, and ſuch like, and afterwards a Milk-Diet.

Though Arſenick be a quick Poiſon for both Men and Brutes, it is recommended by ſome in Intermitting Fevers; but, let it be never ſo much prepared and concreted, its deleterious Qualities are only leſſened, never wholly removed; and therefore though it may be a good Remedy for the preſent, it will afterwards prove a Poiſon, and bring on very diſmal Symptoms. Arſenick therefore, in my Opinion, is worſe than the Fever itſelf; and, among all the Preparations thereof, there is but one which I can recommend, even to be uſed externally.

Take crude Antimony, yellow Sulphur, and Cryſtalline Arſenick, of each two Ounces; powder and mix them well in a Glaſs Crucible, and melt them in

in a gentle Sand-heat, till they come to the Conſiſtence of Pitch, and the Fire being removed, they will concrete into a Maſs of a dark red Colour, which is to be kept for Uſe.

This Medicine is only to be applied externally, as being a mild and gentle Cauſtick, and thought to be indued with a Power of attracting poiſonous or other morbifick Matter from the Centre of the Body to the Surface, like a Loadſtone; and hence it has the Name of the *Arſenical Magnet.* It is likewiſe ſaid to be a powerful Ripener, and is therefore applied to Venereal Buboes, with the *Emplaſtrum Diachylon magnum.* It is an Ingredient in the *Emplaſtrum Magneticum* of *Angelus Sala*, and recommended for maturating and breaking Venereal Buboes, and is thought to draw the Peſtilential Virus out of them. It is likewiſe proper in ſcrophulous Ulcers, which it opens, cleanſes, and incarns, without the Aſſiſtance of any other Ointment.

SECT.

SECT. VI.

Of Metallick Foſſils.

BY Metallick Foſſils, I underſtand Mineral Subſtances which have a great Affinity with true Metals, but which differ from them in this, that they are neither ductile nor malleable, but brittle, friable, or fluid. Some of theſe Subſtances contain a certain Portion of true Metal: ſuch as the Bloodſtone, Smiris, Loadſtone, Magneſia, and Calmine, which are mixed with Iron; and Chalcitis, which contains ſome Quantity of Copper. Others cannot be reduced to any Metal, but are Subſtances of a peculiar Nature, which may be termed *Spurious Metals*, or *Semi-Metals*. Of this Kind are Antimony, Biſmuth, Zinch, and that Metallick Fluid which from its Colour is termed *Hydrargyrum*, or *Quickſilver*.

CHAP. I.

Of Metallick Foſſils which contain Parts of ſome true Metal.

ART. I. *Of the Lapis Hæmatitis, or Bloodſtone.*

LAPIS Hæmatitis, λίθος αἱματίτης of the *Greeks*, *Sedenegi* and *Sadanegi* of the *Arabians*, is a ferruginous, hard, glebous, ponderous Metallick Subſtance,

ſtance, of a dark red or yellowiſh Colour, and ſometimes blackiſh, or of the Colour of Iron, and of an earthy aſtringent Taſte. Being broken, it ſhews fine, long, ſharp Fibres, like thoſe of Wood. It was called *Hæmatites* in *Greek*, from its Colour, or becauſe it is indued with the Virtue of ſtopping Blood.

Pliny diſtinguiſhes five Kinds of Bloodſtone, according to the Countries where they are found, and their differing Colour and Hardneſs. Others divide them according to their different outward Appearance. Some Stones have an uneven and angular Surface, as thoſe that come from *Spain*; ſome are cluſtered on the Surface, like Bunches of Grapes, from whence they are termed *Hæmatites Botryodes*, as we ſee in thoſe brought from the *Hercynian* Foreſt in *Germany*. Others are formed in various Convolutions, like Inteſtines, or the Outer Surface of the Brain; and theſe Surfaces are very beautifully delineated by *Aldrovandus* and *Imperati*.

In Iron Mines, the Bloodſtone is often found in a diſtinct Oar; but where-ever it is found, or wherever it grows, there are always red Stones and red Earth near it. It is likewiſe found ſometimes in the ſame Places with the Loadſtone, and indeed there is a great Affinity between theſe two, as being both juſtly reckoned Iron Oars. The Bloodſtone is dug up in many Places of *Germany*, in *Italy*, and *Spain*, and this laſt is reckoned the beſt. That Bloodſtone is to be made choice of, which is hardeſt and ſmootheſt, without any Mixture of Filth, or Veins; and this Stone is carefully to be diſtinguiſhed from another ſomething like it in Colour, but ſofter, which Painters and Joiners make uſe of, called by Miſtake in ſome Books *Hæmatitis*, but its true Name is *Rubrica Fabrilis*, or Ruddle.

Bloodſtone is a kind of Iron Oar, from which Iron may be extracted; and in the Valley of *Joachim* in *Bohemia*, the Mines of theſe Stones are ſo rich, that

it

it is thought worth while to extract the Iron from them, which is likewise excellent in its Kind, as *Agricola* relates. This Stone is dissolved by Acids in the same manner as Iron, and with the Vitriolick Acid is turned into green Vitriol.

Both *Dioscorides* and *Galen* used Bloodstone in Roughnesses or Cicatrices of the Eye-Lids; and for this Purpose they first rubbed it upon a Whetstone with Water, a Decoction of Fænugreek Seeds, or the White of an Egg; and they commend it when diluted with Milk in Suffusions of the Eyes. In all Ages it has been used in a fine Powder, from one to four Scruples in any proper Vehicle, for all Kinds of Hæmorrhages, in Spitting Blood, and in Ulcers of the Lungs, which it dries and heals. In the Fluor Albus, Cachexia, and Suppression of the Menses, it is found to be as effectual as the *Crocus Martis Aperiens.*

The Chemical Preparations of the Bloodstone are not altogether to be despised; such as its Ammoniacal Flowers, Urinous Spirit, Aperient Tincture, Styptick Liquor, Acid Spirit, and Crocus; all which are thus prepared:

Take of the finest Powder of Bloodstone, two Pounds; powdered Sal Ammoniac, a Pound: Mix them well, and put them in an Earthen Cucurbit with a Glass Alembick, and proper Receiver fitted to it. Then sublime them in an open Fire, gradually increased. The first Substance that rises is an Ammoniacal Spirit, tinctured with something of a yellowish Cast; afterwards come Citrine Flowers, then Flowers of a Saffron Colour. The Mass that remains in the Cucurbit being put into a Retort, and distilled with a great Degree of Fire, will yield an Acid Spirit, not unlike that of Sea-salt. If the Residuum be exposed to the open Air, it will dissolve into a Gold-coloured styptick Liquor,

of

of great Uſe. But if the Reſiduum be calcined in a ſtrong Reverberatory Heat, it will turn to a Crocus, of the ſame Virtues with the Crocus Martis Aſtringens.

From the above-mentioned ſaffron-coloured Flowers, a Tincture may be extracted with Spirit of Wine, which ſome Chemical Phyſicians prefer to the Tincture of Gold, and therefore term it the *Elixir of the Tree of Life*. The Ammoniacal volatile Spirit has the ſame Virtues with the volatile Spirit of Sal Ammoniac, and is even more proper to reſolve Obſtructions, becauſe of the Martial Parts contained in it. Both the Flowers contain the volatile fine Martial Parts of the Bloodſtone, raiſed by the Sal Ammoniac, and as the ſaffron-coloured Flowers contain more ſuch Parts than the Citrine, they are moſt eſteemed. They ſmell ſomething like Saffron, and are therefore by *Paracelſus* termed *Aroph*, which is the ſame with *Aroma Philoſophorum*. They open Obſtructions, attenuate groſs viſcid Humours, and very often carry them off by Stool or Urine. The Doſe is from three Grains to a Scruple; which if it exceeds, they ſometimes cauſe Vomiting. They are ordered with very great Succeſs in a Suppreſſion of the Menſes, Cachexia, Obſtructions in the Viſcera, ſtubborn Fevers, and Quartan Agues. They are by ſome preferred to the *Flores Martiales*, becauſe in this Oar the Metallick Parts are of a more rare Texture, and the ſeveral Principles cohere leſs than in Iron itſelf, and conſequently they are more eaſily diſſolved by the Sal Ammoniac. Theſe Flowers may be ordered in this Manner:

Take of the Flowers of the Bloodſtone, twelve Grains; Saffron and Myrrh, of each five Grains; Extract of Wormwood, a ſufficient Quantity for a Bolus, to

to be taken in the Morning, in a Suppreſſion of the Menſes.

Take Arum Root and White Agarick, of each an Ounce; Gum Ammoniac, half an Ounce; Flowers of Bloodſtone, a Drachm; Extract of Aloes, of Cinnamon, and of Saffron, of each two Drachms; Syrup of Fumitory a ſufficient Quantity to make an Opiate, of which any Quantity between a Scruple and a Drachm is to be taken in Obſtructions of the Viſcera, Jaundice, Schirrhus, Dropſy, and Cachectick Affections.

Take Peruvian *Bark, an Ounce; Flowers of Bloodſtone, a Drachm; Syrup of Wormwood, a ſufficient Quantity to make a ſoft Opiate, two Drachms of which are to be taken every four Hours, in Quartan Agues, and in all ſtubborn Intermitting Fevers.*

Inſtead of the Flowers, the Tincture may be uſed, which has the ſame Virtues, and may likewiſe be uſed with more Safety in Hæmorrhages, from ten to thirty Drops in any proper Vehicle. The ſtyptick Liquor obtained by diſſolving the *Caput Mortuum*, or *Reſiduum*, after Diſtillation in the Air, is of very great Efficacy in ſtopping all Kinds of Hæmorrhages, either externally applied, or taken inwardly, in the Quantity of between five and twenty Drops. It likewiſe cures the Fluor Albus, Gleets, and Looſeneſſes, whether with or without bloody Stools, where the Patient's Body has been duly prepared. Laſtly, whatever Efficacy is in the *Crocus Martis Aſtringens*, may be found in the *Caput Mortuum* of the Bloodſtone.

The Bloodſtone is an Ingredient in the Dyſenterick Powder of *Charas*, in the Powder againſt Hæmorrhages

rhages and Hernias, and in the ſtyptick Plaiſter of that Author.

Art. II. *Of Smyris, Loadſtone, Magneſia, and Petracorium.*

SMYRIS, *Smyrillus*, or *Emery* of the Shops, σμύρις of the *Greeks*, *Smergium* of *Serapion*, *Sumbagedi* of the *Arabians*, is a ferruginous, heavy, Metallick Subſtance, of a Colour inclining to Black, and ſo hard that Lapidaries uſe it in cutting and poliſhing their Diamonds, and Smiths to poliſh their Iron and Steel.

Emery is of three Kinds. The Common, which is blackiſh, and very much uſed, is found in many Parts of *Europe*, eſpecially in an Iſland on the Coaſt of *Tuſcany*, and in *Guernſey* in the *Britiſh* Channel. The Second is a hard, uneven ſort, of a reddiſh Colour, like Bloodſtone or Oker, but does not ſtain the Hands. This is by ſome reckoned among the Bloodſtones. The Third is of a blackiſh red Colour, ſtreaked with gold-coloured Veins. It is found in the Gold Mines of *Peru*, and really contains Gold. This Kind is thought by Chemiſts to be a Gold Oar, or rather a ſort of immature or imperfect Gold, and therefore they eſteem it very much, and extract a Tincture from it with Spirit of Sea-ſalt, with which they fix Mercury in an Inſtant, and give this Subſtance the Name of the *Miraculous Precipitate*, becauſe they fancy they ſhall at length attain the true Art of making Gold by Means thereof.

Emery is recommended by *Diaſcorides* and *Galen* as a Dentifrice; but it corrodes the Teeth too much, and inſenſibly wears them away. It is not now of any other Uſe in Phyſick.

Magnes, or the Loadſtone of the Shops, Ἡρακλειος λίθος and Ἡρακλιωτης of the *Greeks*, *Lapis Heraclius*, from *Heraclea*,

Heraclea, a Town in *Lydia*, Μαγνήτης, from *Magneſia*, another Town in *Lydia*, Σιδηρίτης, from its attracting Iron, *Magnatis* of *Avicenna*, and *Calamita* of *Rhaſes*, is a ferrugnious, denſe, foſſil Subſtance, of a blackiſh, bluiſh, or reddiſh Colour, attracting Iron or another Magnet, or repelling them, and directing its Poles always to thoſe of the World where it is at Liberty to move. This Subſtance is not to be confounded with the *Magnes* of *Theophraſtus*, which, he ſays, was white and ſhining like Silver, not hard, but eaſily made into Veſſels by the Turner's Art; neither did it attract Iron. It was however named from the ſame *Magneſia* in *Lydia*. Another Name of the Loadſtone is *Lapis Lydius*, which is likewiſe applied to what we call the Touchſtone, by which the Truth of Gold and Silver are tried. Theſe two Significations of *Lapis Lydius* are therefore carefully to be diſtinguiſhed, becauſe they are very different from each other, though they are both from their common Country.

Some of the antient *Greeks*, having obſerved the Virtue of the Magnet in repelling Iron, believed there were two Kinds of it, different from each other, one that attracted Iron, the other that repelled it.

The Loadſtone is found in many Countries of *Europe*, and for the moſt part in Iron Mines; but the beſt are thoſe that come from the *Eaſt Indies* and *Ethiopia*. It is undoubtedly a kind of Iron Oar, and in ſome Places in *Germany* they actually extract the Iron it contains; and when expoſed in the Focus of a great Burning Glaſs, it likewiſe manifeſtly diſcovers Iron. The Virtues of the Magnet in attracting and repelling Iron, and in turning its own Poles to thoſe of the World, are very wonderful; and eſpecially its being able to communicate theſe Virtues to the Iron which it touches.

The Loadſtone is not uſed inwardly in Phyſick, though *Galen* ſays it has the ſame Virtues as the Bloodſtone, and alſo mentions its Purgative Virtue, and recommends it, on that Account, in Dropſies. *Diaſcorides* propoſes that it be given, in the Quantity of three Oboli, to evacuate groſs Melancholy Humours. Some think it poſſeſſed of a deleterious Quality, which is denied by others; but I imagine the poiſonous Quality is to be underſtood of that other Kind of *Magnes*, mentioned by *Theophraſtus*, which I take to be a kind of Native Litharge.

Under the Loadſtone ſome rank likewiſe a White Stone, called by the *Italians Calamita Alba*, and *Magnes Carneus*; becauſe, as the true Loadſtone draws Iron, this is ſuppoſed to draw Fleſh. It is a white Stone, marked with black Spots, which, if laid on the Tongue, ſticks very ſtrongly to it, and is no other than a kind of Rocky Marle, found ſometimes in the ſame Mines with the Loadſtone. It is ſaid to be of wonderful Efficacy in Love Affairs, but all the Stories told of it are fictitious and idle. The true Loadſtone, externally uſed, is drying, aſtringent, and conſolidating. It is an Ingredient in the *Emplaſtrum Manus Dei*, *Emplaſtrum Divinum*, *Emplaſtrum Nigrum*, and *Emplaſtrum Stypticum* of *Charas*.

Magneſia, or *Manganeſia* of the Glaſs-Makers, the Soap of Glaſs of *Merret*, is a foſſil, metallick, ferruginous Subſtance, reſembling Antimony in its ſhining Colour, and very brittle. *Pomet* mentions two Kinds of it; one aſh-coloured, which is not eaſy to be got, and therefore little uſed; the other black, which is very common. It is uſed in making and purifying of Glaſs; for, by mixing a ſmall Quantity of it with the Glaſs, whilſt in Fuſion, it clears it from any green or bluiſh Colours, and makes it more

more tranſparent and bright; and it was on that account that *Merret* termed it *Sapo Vitri.* If too great a Quantity of it be put in, it gives the Glaſs a purple Colour. It is uſed by Potters in colouring their Veſſels black, as the *Zaffera*, already mentioned, is for blue. The ſame *Merret* ſays, the beſt Manganeſe is that which is hard, heavy, ſparkling, and blackiſh, and which, being reduced to Powder, turns Lead black. It is dug in *Germany*, *Italy*, *Piedmont*, and in *England*, near the *Mendip* Hills in *Somerſetſhire*, famous for Lead Mines; and, accordingly, *Merret* tells us, that where-ever the Miners find Manganeſe, they conclude that there is Lead Oar under it; but whether it contains any Lead or not, has not hitherto been diſcovered. It is not uſed in Phyſick.

The *Lapis Petracorius* of *Pomet*, or Perigord-ſtone, is a foſſil, ferruginous Subſtance, black, hard, and heavy, ſeeming to contain ſome Particles of Iron. It is dug in the Mountains of *Dauphiny*, and uſed only in painting Earthen Veſſels, and by the Enamellers.

ART. III.

Of the Lapis Cadmia, Lapis Calaminaris, Tutty, Pompholyx, and Spodium.

THE Name *Cadmia* has been applied to ſeveral Things. *Diaſcorides* underſtood by καδμεία, the Recrements which ariſe from Braſs, while melting in the Furnace. *Galen* applied it to two Subſtances, one which comes from Braſs, which is the ſame with the *Cadmia* of *Diaſcorides*; the other a native Subſtance found in the Iſland of *Cyprus*, which he terms λιθώδης, or *Stony*. *Pliny*, beſides the Factitious *Cadmia* of *Diaſcorides* and *Galen*, mentions another by the Name of *Lapis Æroſus*, which he

ſays was an Oar out of which Copper was made; and this is perhaps the ſame with the *Cadmia Lapidoſa* of *Galen*. The Dealers in Metals call by the Name of *Cadmia* the *Lapis Calaminaris*, uſed in making Copper into Braſs; and the *Germans* have given the ſame Name to *Cobalt*; and therefore *Agricola*, and the more modern Writers, diſtinguiſh three Kinds of *Cadmia*; one Metallick, one Foſſil, and the third that of the Furnaces; which Diviſion we ſhall here retain.

The Metallick *Cadmia* is a Foſſil Subſtance, containing ſome Portion of Copper, Silver, or of both, and is of two Kinds. Firſt, the Native *Cyprian Cadmia*, which is a foſſil Subſtance, or Copper Oar, as has been already ſaid. It is likewiſe found in ſeveral Places of *Aſia* and *Italy*; and is probably the ſame that *Galen* found in the Iſland of *Cyprus*, though he does not mention that Copper was obtained from it by Fuſion. It is now altogether unknown, or at leaſt confounded with other Copper Oars. The other Kind of Metallick *Cadmia*, or the *Cobalt* of the *Germans*, is a Metallick Subſtance, from which Arſenick, Zaffera, and the *Encauſtum Cæruleum* are prepared, in the Manner already deſcribed.

The Foſſil *Cadmia* of *Agricola*, Stony *Cadmia* of *Schroeder*, *Lapis Calaminaris*, or *Calamin*, of the Shops, is a foſſil Subſtance, of a middle Conſiſtence between Stone and Earth, of different Colours; ſuch as a pale Colour inclining to White, Yellowiſh, and a blackiſh Red. This laſt is full of ſmall ferruginous Globules like Grains of Pepper, and marked with white Veins, and is found in great Quantities about *Bourges*, and near *Saumur* in *Anjou* in *France*. The others are dug in *Germany*, near *Aix la Chapelle*, and all Kinds of it ſeem to partake of an Iron Oar, becauſe the greateſt part is attracted by the Loadſtone. This Species of *Cadmia* was

was probably unknown to the ancient *Greeks*, or at leaſt not uſed by them in Phyſick, ſince it is not mentioned either by *Diaſcorides* or *Galen*. It is now preſcribed, by ſome Phyſicians, to dry running Ulcers, to heal the excoriated Parts of Children; either in a fine Powder by itſelf, or mixed with Ointments. It is an Ingredient in the Ophthalmick Ointment of *Renodæus*; and in the red Drying Ointment, the Plaiſter called *Manus Dei*, and in the Styptic Plaiſter of *Charas*.

The greateſt Quantity of *Calamin* is conſumed in making Braſs; and *Agricola* deſcribes two Ways of doing this, in the following manner:

They take ſmall Pieces of the beſt Copper and Calamin, firſt calcined and finely powdered, and lay them in Strata in large Pots, each of which holds about fifty Pounds. Some add Glaſs likewiſe; and ſome uſe the Cadmia of the Furnaces, inſtead of the Foſſil Kind. Theſe Pots are ſet in an arched Furnace, on Iron Stands, placed in the Middle of it, and the Fire is kindled below them. In the upper Part of each Furnace, is a round Hole covered with a Stone, by which they regulate the Fire. When the Mixture in the Pots has been thus expoſed to a very great Degree of Fire, and continued Infuſion, for eight or nine Hours, it is changed to Braſs, and increaſed very much in ſpecifick Gravity, tho' it has not yet the Gold Colour. The Pots being cooled, are taken out of the Furnace; and the Braſs, which is now of the Colour of white Embers, and Cavernous like a Pumice-ſtone, is melted a ſecond time, and thrown into a Mould, the Sides of which are Stone, and the Wideneſs or Diſtance between theſe Sides equal to the Thickneſs that the Braſs Plates, now become of a Yellow or Gold Colour, are de-

fired to be of. Theſe Plates are afterwards beat upon the Anvil, to make them perfectly uniform.

The other Way of making Braſs is, to *Take a Veſſel, in which Silver is uſually melted, to coat it on the outſide with Clay, mixed with Filings of Iron, and to line the inſide with the pureſt Honey. Small Copper Plates, of about a Finger's Breadth, are likewiſe rubbed over with the ſame Honey, and then covered with fine Powder of Calamin, Crude Tartar, and Charcoal made of the Lime Tree, mixed in equal Quantities. The Plates thus prepared, are thrown into the Veſſel, and the Veſſel covered with a Brick, over which the Coat of Clay is likewiſe carried, a Hole being made in the Middle large enough to admit an Iron Rod, to ſtir the melted Metal. The Veſſel is then ſet in ſuch a Furnace, as the Refiners uſe; and as ſoon as the Calamin begins to mix with the Copper, a red Smoke aſcends, which afterwards becomes partly Red and partly Blue, and laſt of all Yellow; and this ſhews that the Mixture is now perfected. The Veſſel being then taken out of the Furnace, the Braſs is found of a perfect Gold Colour. In this Operation, the Copper takes up a third Part, or at leaſt a fourth Part of its Weight of Calamin, and yet remains as ductile as before; for it may be drawn out into very fine Wire, or beat into very thin Leaves.*

Cadmia Fornacia, or of the Furnaces, is of two Kinds; the factitious *Cadmia* of the Ancients, and *Cadmia* of the Moderns, or the *Tutty* of the Shops. But the firſt Kind of factitious Cadmia, *Diaſcorides*, *Galen*, and *Pliny* underſtood to be only the Recrements of Copper-Oar, which is blown off by the Bellows in melting Copper, and ſticks to the Sides of the Furnace; of which there are different Species, accord-

according to the different Figures into which it is concreted, and the Fineneſs and Variety of its Colours. The fineſt Kind, ſays *Pliny*, ſticks in the very Edge or Border of the Furnace; and is as Light as Wood-Aſhes or Embers. The beſt is that which hangs down from the Arch of the Furnace, called βοτρυώδης, from the faint Reſemblance it bears to Grapes, hanging on the Vine. This is of a middle Weight, between the foregoing Kind and the following, being of two Colours, one Whitiſh like Wood-Aſhes, which is leaſt eſteemed, the other Purple, which is more valued. It is very brittle, and much uſed in Medicines for the Eyes. The third Kind ſticks to the Sides of the Furnace, as being too heavy to riſe to the Top. It is properly a Cruſt, and is uſed to deſtroy Cicatrices, or the remaining Marks of Wounds. From this, two other Kinds are obtained; one of a bluiſh Colour and ſpotted, the other red. The beſt Cadmia, according to *Pliny*, was found in the Furnaces of *Cyprus*; and he informs us further, that a *Cadmia* was likewiſe found in the Silver Furnaces lighter and whiter; but, however, much inferior to the *Cadmia* from Copper. *Galen* ſays, that a Sort of *Cadmia* was made from one kind of Pyrites. But all theſe Kinds are now unknown in the Shops, neither do they ſeem to have been known to the *Arabians*, who were ſo little ſollicitous about the Subſtances, called by the Name of *Cadmia* by the Ancients, and which were only to be found in the melting Furnaces of the Iſland of *Cyprus*, that they gave the ſame Names without Heſitation to other Subſtances; whence a great deal of Confuſion has ariſen, and eſpecially, becauſe ſome of the latter *Arabians*, as well as thoſe who have come after them, have endeavoured to apply to theſe other Subſtances what the Ancients ſaid of their true *Cadmia*; and thus *Avicenna* ſays of the Litharge of Silver, all that *Diaſcorides* has ſaid of *Cadmia*,

The Modern *Cadmia*, *Cadmia Fornacum* of *Agricola*, *Tutia* of the Shops, is a Recrement of *Calamin*, melted with Copper, and not of Copper alone, as was that of the Ancients. The officinal *Tutty* therefore may be defined a Sublimation of *Calamin* from melting Copper to the upper Part or Roof of the Furnace, where it concretes round Iron Rods placed there, into a solid Crust, which is afterwards beat off into Pieces, like the Bark of Trees, of a yellowish Colour, smooth on the inside and sonorous; of a bluish Ash Colour on the outside, and powdered as it were with very small Grains of the same Substance. This is perhaps the same with the Tutty of the Arabians, for *Serapion* describes a Kind of Tutty, which is produced and collected in the Furnaces, in which Copper is turned to a yellow Colour. But it is not certain, whether they might not likewise mean the Calamin itself by that Word.

Tutty is reckoned among the principal Ophthalmick Medicines. It deterges and dries without Acrimony, and is therefore prescribed with Success in Ulcers of the *Cornea*, *Tunica Adnata*, and Eye-Lids; and likewise in Itchings of the Eyes, inveterate Ophthalmias, and to stop an involuntary Flux of Tears and fistulous Humours. It is seldom used without Preparation, which consists in heating it red hot, and then quenching it three or four times in Rose Water, and afterwards levigating it according to Art on a Marble, or Porphyry.

Take prepared Tutty, half a Drachm; Mouse Ear, Eye-Bright, and Rose Water, of each an Ounce. Mix them, and make a Collyrium. Or, Take Succotrine Aloes, and prepared Tutty, of each six Drachms; White Sugar, a Drachm; Rose Water, and any mild White Wine, of each six Ounces. Digest them in the Sun for forty Days,

in a cloſe Glaſs Veſſel, and keep the Liquor without ſtraining it. It is applied by dropping a ſmall Quantity of it into the Eyes from time to time. Or, Take of prepared Tutty, a Drachm; freſh Butter, half an Ounce; make an Ointment, of which a little is to be applied to the Corners of the Eyes, and Edges of the Eye-Lids. It is an Ingredient in the Ophthalmick Ointment of Charas.

The *Pompholyx* and *Spodus*, or *Spodium*, of *Diaſcorides* and *Galen*, are now unknown in the Shops. They tell us, that it was made two Ways; the firſt, by burning melted Copper to a white, ſmooth Powder; and the other, by blowing off with Bellows what can be thus ſeparated from *Cadmia*. *Diaſcorides* mentions two Kinds of *Pompholyx*; one nearly the Colour of Copper, and moiſt or fatty; the other very white and ſmooth. This laſt, he ſays, was made by the Copper-Smiths, in endeavouring to meliorate that Metal, which they did, by throwing into it a greater Quantity than uſual of powdered *Cadmia*; but it is uncertain, whether he here means new Oar, or the factitious *Cadmia* already mentioned. However this be, the fine Duſt, or Flower, that aroſe from this Mixture, concreted into *Pompholyx*. It was likewiſe made by burning *Cadmia* alone in Furnaces; for having thrown it in ſmall Pieces into the Fire, near the Nozel of the Bellows, they blew the moſt fine and ſubtle Parts againſt the Roof of the Furnace; and what was reflected from thence was called *Spodium*, which is of a blacker Colour and heavier than the *Pompholyx*, and full of Earth and other Filth; and indeed was no better than the Sweepings of the Shops and Furnaces, and therefore was much leſs eſteemed than *Pompholyx*. Theſe Subſtances might probably ſtill be had, where great Quantities of Cyprian or red Copper are melted; but they are now unknown in the Shops.

The

The *Pompholyx* of our Shops, *Nihil Album* of ſome Authors, is a fine white Flower, or Soot, which ſticks to the Arch of the Furnaces and Covers of the Crucibles, in which Calamin and Copper are melted together. It is to be choſen very clean, without any Mixture, and has the ſame Virtues with Tutty. It dries, and is gently aſtringent without Acrimony; it abſorbes the corroding Acrimony of the Fluids, and from thence is reputed a Cooler. It is uſed with Succeſs to dry old cancerous Ulcers, and to cure Defluxions of the Eyes. From this Subſtance is prepared the *Unguentum Diapompholygon.*

We have already ſaid, that the *Spodus*, or *Spodium*, of the *Greeks*, was the Aſhes, or rather the Metallick Flower, collected in the Furnaces and Shops of Copper-Smiths, and that it differed from their *Pompholyx* in being heavier, and not ſo pure. *Pliny* has, however, diſtinguiſhed ſeveral Kinds of it; the *Spodium* of Copper, which is the beſt of all; that of Silver, called alſo *Lauroſis*, from Mount *Laurus*, where there were Silver Mines; that of Gold, collected in refining that Metal; and that of Lead, which was next in Goodneſs to the Copper *Spodium*, according to *Diaſcorides*. The *Spodium* of the *Greeks* was never given inwardly, but was applied externally. Beſides theſe Metallick Kinds of *Spodium*, the *Arabians* abuſing that Name, which in the *Greek* Language, is very like the Word, which ſignifies Aſhes, added other Kinds, ſuch as the Aſhes of Plants and Animals. Theſe *Succedanea* to the true *Spodium* were, by the *Greeks*, termed *Antiſpoda*; ſome of which are mentioned by *Diaſcorides*; ſuch as the Leaves, Flowers, and unripe Fruit of the Myrtle, calcined and waſhed; the Leaves of the wild Olive; Bulls Glue; new-ſhorn rough, greaſy Wool; Pears or Apples, moiſtened with Water, and then burned and ſuch like. The Aſhes of ſome burnt Roots were

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by *Avicenna* termed *Tabaſcir*, which Word the Interpreters have rendered *Spodium*; and that *Spodium*, which was brought from the Eaſtern Countries, was undoubtedly a kind of coarſe Sugar, as is proved, by very ſtrong Arguments, by the learned *Salmaſius*; and therefore it is no wonder, that, by the *Arabians*, and thoſe who followed them, the inward Uſe of *Spodium* has been ſo much recommended. The *Arabians* were deceiv'd by the Aſh Colour of coarſe Sugar, and the Merchants by what was related to them, that it was the Powder of ſome burnt Reeds. Burnt Ivory is now commonly called *Spodium* in the Shops.

ART. IV. *Of Chalcitis, Miſy, Sory and Melanteria.*

Chalcitis, *Miſy*, and *Sory*, are foſſil Subſtances, very much reſembling each other, both in Original and Virtues, found chiefly in the Mines of *Cyprus*. *Galen* ſays, he found theſe Subſtances in the Mines, lying in long *Strata* upon each other; the loweſt Stratum being the *Sory*; the middle, the *Chalcitis*; and the uppermoſt, the *Miſy*. He likewiſe informs us, that in Length of Time, the *Chalcitis* changes into *Miſy*; for having kept a Piece of *Chalcitis*, which he took out of the Mine, for about thirty Years, he found the outer Surface of it changed to *Miſy*, the middle remaining unaltered; and by ſome ſmall Alteration, which he obſerved in *Sory*, after a long time, he concludes, that it is likewiſe changeable into *Chalcitis*.

The *Chalcitis* of the *Greeks* is a foſſil Subſtance, reſembling Copper, brittle, but not ſtony, and variegated by a Mixture of ſhining Veins, finer than *Miſy*, but coarſer than *Sory*; and in the Fire turns to the Colour of Blood, or of *Minium*. The *Miſy* of the *Greeks*, is a foſſil yellow Subſtance, ſparkling like Gold, and ſhining when broken, growing from

Chalcitis,

Chalcitis, as Verdegrease does from Brass; and seeming to be nothing more than an Efflorescence from that Substance. The *Sory* of the *Greeks*, is a fossil Substance, thicker and more compact than *Chalcitis*, which emits Sparks by Attrition, and is of a spungy Texture, full of Holes, of a viscid Texture, black Colour, astringent nauseous Taste, and of a strong hurtful Smell. This Description agrees very well to a Substance, which the *Turkish* Women make use of to take off Hairs from their Bodies, called by them *Rusma*, which is described by *Bellonius* to be a fossil, almost like Excrement, in Appearance, but lighter, and of a black burnt Colour like Pitch, found in some Mines in *Gallo-Græcia*. The way of using it is this:

> *They reduce it to a fine Powder, and mixing with it an equal Quantity of Quick-Lime, they macerate it in Water, in an earthen Vessel. When the Women are to go into the Bath, they lay it on such Parts as they want to have smooth, and let it remain for about as long time as is required to boil an Egg. Then finding by the Touch, that the Hairs are loosened and ready to fall off, they wash the Part with warm Water, and the Paste and Hairs come off together. Our Barbers use Orpiment and Quick-lime for the same purpose.*

Melanteria of the *Greeks* is said, by *Dioscorides*, to be sometimes found, like concreted Salt, in the Passages to Mines, from whence Copper is dug; and he observes, that the best was reckoned that which is of a Gold Colour, smooth, clean, and even, and which turns black as soon as it touches Water.

These fossil Substances are now rarely found in Apothecaries Shops, being to be had no where else than in *Cyprus*, *Asia Minor*, or *Egypt*. They are caustick, and burn to an Eschar, and are in some

Degree

Degree aſtringent. *Chalcitis* was uſed in the *Theriaca* in *Andromachus*'s time; but as it can ſeldom now be had, *Colcothar* or Vitriol calcined to Redneſs is ſubſtituted for it.

CHAP. II.

Of Metallick Foſſils of a peculiar Nature, called Metals by ſome.

ART I. *Of Antimony.*

Stibium, or Antimony of the Shops, στίμμι of *Diaſcorides*, probably the πτερασσωον of *Hippocrates*, *Lapis Spumæ Candidæ nitentiſque, non tamen tranſlucentis* of *Pliny*; *Ailmad* or *Alamad* of the *Arabians*, is a metallick, ſolid, heavy, brittle Subſtance, of a lead Colour, with long ſhining Streaks, fuſible by Fire, but not ductile. Native Antimony is of different kinds; ſome is dug up with the Appearances of poliſhed Iron or Lead, but brittle and mixed with white or cryſtalline Stones. Some is compoſed of fine ſhining Lines like Needles, ſometimes diſpoſed in regular Ranks, ſometimes without any obſervable Order, which is termed Male Antimony. Some is diſpoſed in thin broad Plates or *Laminæ*, called Female Antimony by *Pliny*. Some is a Congeries of ſmall Lead-colour'd Rods, got from a tender white Stone, and eaſily melting in the Fire like Sulphur, which enters its Compoſition in great Quantities. Antimony of this kind is found in ſeveral Parts of *Italy*. Some is marked with Saffron-colour'd or reddiſh Spots, as the *Hungarian* Antimony, mightily eſteemed by Chemiſts, becauſe of the Golden Sulphur, with which they imagine it to be ſtock'd. Antimony is ſometimes found in a particular Oar, but

but most commonly mixed with other Metals; and hence its Name may have been derived. Antimony being the same as ἀντίμονον, an Enemy to Solitude.

Ores of Antimony are found in many Countries, and very plentifully in several Provinces in *France*, *Auvergne*, *Poictou*, *Britany*, and others. The Glebes of Antimony are dug out of the Earth, mixed with a stony Matter, and the pure Mineral or Metal is separated by breaking the Glebe into small Pieces, and afterwards treating it in the same manner as in refining other imperfect Metals.

The *French* Antimony consists of almost equal Parts of common Sulphur, and of a reguline Substance. The Sulphur in Antimony is discovered by the Smell and the blue Flame, which it emits, when calcined in a dark Place; and when thrown into a Crucible with Nitre, it fulgurates in the same manner as a Mixture of Nitre and Sulphur. By distilling Antimony with corrosive Sublimate, we get the Cinnabar of Antimony, which consists of the Sulphur of Antimony, and the Quicksilver of the Sublimate. If Antimony be boiled in common Water, mixed with four times its Quantity of Quick-lime or Pot-ash, the Sulphur it contains being dissolved in the Water, by means of the alcaline Salts, may be precipitated by Vinegar, or any other Acid. The reguline Substance is fusible not ductile, shining like polished Iron, and seems to consist of broad Laminæ; which, when the Regulus is rightly prepared, are disposed in a radiated Manner, so as to exhibit the Appearance of a Star on its upper Surface. This Regulus may, by being calcined in the Sun, be separated from almost all its Sulphur, and turned to an Ash-colour'd true vitrifiable Calx; which being melted by a strong Fire, is converted into a Hyacinth-coloured Glass. If to this Glass, while in Fusion, any sulphurous or other inflammable Substance, be added, it presently recovers its reguline Form

and

and Splendor. Becauſe of the great Quantity of Sulphur which Antimony contains, an acid Liquor may be extracted from it, in nothing different from Spirit of Sulphur. From all which Obſervations, it is evident, that Antimony conſiſts of a ſulphurous Acid, of a bituminous inflammable Part, and of a vitrifiable metallick Earth. The Regulus of Antimony is diſſolved by *Aqua Regia*; but is only calcined by the other Diſſolvents of Metals. Antimony diſſolves and deſtroys all Metals, except Gold, when melted with them. From this Property of Antimony, many Names have been given it by Chemiſts; ſuch as the Devouring Wolf; Saturn, who eats his Children; the Lead of the Wiſe; and the Sugar of the Sun; becauſe Gold, melted with Antimony, is purified from all other Metals with which it is mixed, and comes out brighter and cleaner than before. Antimony is commonly thought by Chemiſts, to contain a true, but unripe, ſolar Sulphur; and hence it has been called Leprous Gold, and the *Ens primum ſolare*; but it ſhall be ſhewn hereafter, that the Sulphur of Metals is not different from the pure Original Sulphur, or Oil of Animals and Vegetables.

Among the Ancients, Antimony was uſed to dye the *Supercilia* and *Cilia* Black. Accordingly we find in Scripture, that the wicked Queen *Jezabel*, in order to charm the King her Husband, painted her Eyes with Antimony; and the Women, who uſed that Practice, are alſo reproved by the Prophets; and from thence it was, that this Mineral got the Name of γυναικειον. Antimony, according to *Diaſcorides*, is aſtringent, obſtructs the Paſſages, cools, prevents Excreſcences in the Fleſh, cicatrizes Ulcers, ſtops Bleeding, and cleanſes the Filth and Ulcers of the Eyes. *Galen* mentions its aſtringent and drying Vertue, and ſays, that it was uſed by Oculiſts in their dry Collyriums in that Intention. It was the Cuſtom

Custom of the Ancients to burn it, then to quench it in Womens Milk, or Wine, and having afterwards reduced it to Powder, to make it up into little Pastils; which being perhaps of a quadrangular Figure, it was from thence called τετράγωνον by *Hippocrates*. The Emetick Virtue of Antimony seems to have been unknown to the Ancients, or at least they seldom used it as a Cathartick. *Diascorides* indeed mentions it in one Place, as an Ingredient in a purging Medicine made of *Elaterium* and Salt; but the Antimony seems to have been there ordered only to give a Colour to the Composition. Its Cathartick Quality became generally known, about the twelfth Century, in which a *German* Benedictine Monk named *Basilius Valentinus*, published a Book called *Currus Triumphalis Antimonii*, where he extolles the Virtues of that Mineral and its Preparations, in the Cure of an infinite Number of Diseases. In the fifteenth Century *Paracelsus*, following the reigning Opinion, made the Fame of the Virtues of Antimony become still more Universal; however, Physicians disputed afterwards with great Warmth and Virulence, concerning the beneficial and deleterious Qualities of Antimony. At present, they are all agreed, that it is a very powerful and safe Medicine; and they acknowledge two Virtues in it, depending on its different Preparations, one Emetick, or Cathartick; the other Diaphoretick; for all Medicines prepared from Antimony do either purge upward or downward, or are Diaphoretick and Sudorifick. Crude Antimony is seldom used in Physick; tho' it is certain, that it possesses no hurtful Qualities, since it may be taken inwardly in the Quantity of a Drachm or two without exciting any Nausea, and is often boil'd in sudorifick and drying Apozems, without communicating to them any emetick or other prejudicial Virtue; and indeed that way of treating Antimony has no Effect at all, since it communicates nothing to the Water,

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at leaſt nothing that the Water can retain, how long ſoever it be boiled in it. The active Qualities of this Mineral are therefore intirely owing to its Preparations, except it be rendered Emetick by ſome acid Juices, which it meets with in the Stomach.

Crude Antimony taken inwardly in the above-mentioned Quantity, diſſolves Viſcidities in the Fluids, opens Obſtructions, and is commended by ſome as a ſafe Remedy in cutaneous Diſeaſes, in Conſumptions and Epilepſies. It is likewiſe of great Uſe in fattening Brutes. The external Uſe of it is likewiſe recommended for drying Ulcers, in curing the Itch, and other Diſeaſes of the Skin, when mixed in Ointments; in Plaiſters for reſolving Tumours; and in *Collyria* for Inflammations, and other Affections of the Eyes.

The moſt common Preparations of Antimony, are the *Hepar* or Liver of Antimony, *Crocus Metallorum*, *Vinum Stibiatum*, Emetick Tartar, Glaſs of Antimony, the Golden Sulphur of Antimony, and the Flowers, Butter, and Cinnabar of Antimony, the Powder of Algaroth, the Univerſal *Panacea*, Bezoar Mineral, Diaphoretick *Calx*, or Diaphoretick Mineral, and the Tincture.

The Liver of Antimony, and *Crocus* of Metals, are commonly prepared in this manner:

Take equal Parts of Antimony and Nitre finely Powdered. Mix them perfectly, and cauſe them to detonate in a Metal Mortar, by throwing in a burning Coal, till the Whole is ſufficiently deflagrated, and reduced to an half vitrified Maſs; which, from its Colour, is termed the Liver of Antimony. Reduce this Maſs to a very fine Powder, and let it be waſhed three or four times in warm Water till it is deprived of its Salts. This Powder, afterwards dried is termed Crocus Metallorum, *or* Terra Sancta Rulandi. *When given in Subſtance, from two to five Grains,*

it is a very ſtrong Emetick; and from it is prepared the emetick Wine, by infuſing it to the Quantity of three Ounces in three Pints of White or Spaniſh *Wine, for two or three Days, ſhaking the Veſſel often. The clear Wine ſwimming at the Top is given for a Vomit, from one to four Ounces.*

To make Emetick Tartar:

Take Liver of Antimony, Cryſtals, and Cream of Tartar, of each equal Parts. Boil them in a ſufficient Quantity of common Water, for ſix or eight Hours; then ſtrain the Liquor, and evaporate it to Dryneſs. The dry Maſs is emetick Tartar, which is given as a Vomit from two to ſix Grains.

This is by far the beſt Emetick, that can be prepared from Antimony, and may be given in any Form; and as the Doſes of it are eaſily adjuſted, they may be ſafely increaſed or diminiſhed in any requiſite Degree, that the Phyſician ſhall judge the Strength of the Patient, or Nature of the Diſeaſe to require; whereas the ſame Quantity of the Wine above-mentioned may be more or leſs Emetick, according to its Acidity or Ripeneſs. In making the Liver of Antimony, ſome add to the Antimony and Nitre decrepitated *Sal Ammoniac*, and thus make what is called the Opalin or Ruby-colour'd *Magneſia* of Antimony, from its red Colour, which is a much weaker Emetick than the Liver of Antimony, and does not cauſe Vomiting in Horſes, and other Quadrupeds, but only makes them ſweat, or increaſes Perſpiration. It is given to ſuch Brutes from one to three Ounces once every Day, for ſeveral Weeks together, to fatten them, and cure their cutaneous Diſeaſes, or other Indiſpoſitions. *Crocus Metallorum* is likewiſe uſed to take away Spots in the Eyes, and

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to cure Ulcers, Itchings and *Psora* of the *Cornea Adnata* or Eye-Lids.

The *Glass* of *Antimony* is thus made:

Take any Quantity of Crude Antimony finely powdered, and calcine it in a broad, flat, shallow, unglazed Earthen Dish, over a moderate Fire, stirring it continually with a Tobacco Pipe, or any other Spatula, *not made of Metal, to keep it from sticking to the Bottom of the Dish. Great Care must also be taken, that the Operator do not inspire the Fumes, which it emits. When it has done Smoaking, and becomes of an Ash-colour, the Calcination is finished. If the Powder should happen to run into Lumps or Knots, they must be powdered over again.*

This is the Calx of Antimony, two or three Ounces of which being melted in a Crucible, and then poured on a Marble, and there suffered to cool, make the Glass of Antimony, which is of a Hyacinth-colour; but may be made White, Yellow, Red, or Black, by the Addition of Borax, Sulphur, Sal Gem or Orpiment. Glass of Antimony is a very strong Emetick, but may be weakened by powdering it on a Marble, and then burning Spirit of Wine upon it, for three or four times. Thus deflagrated, it may be given in the Quantity of ten or twenty Grains, which will either vomit or purge gently, and sometimes only cause a Sweat; on which Account it sometimes cures Intermitting Fevers, if given a little before the Paroxysm. If this Glass reduced to an impalpable Powder, be digested for two or three Days with Spirit of Wine, in which half an Ounce of Mastich has been dissolved, shaking the Vessel often, and the Spirit be afterwards evaporated by a gentle Heat, the remaining Glass of Antimony

and Maſtich, incorporated in this manner, will have no emetick Quality. This Powder may be taken in the Quantity of ſix Grains.

The *Regulus* of *Antimony* is thus prepared:

Take of Antimony, ſixteen Ounces; Crude Tartar, twelve Ounces; Nitre, five Ounces; powder, and mix them well together, and throw the Powder in ſmall Quantities at a time into a hot Crucible. When the Deflagrations are over, throw in an Ounce of Nitre by itſelf, and increaſe the Fire, till the whole be throughly melted. Pour the melted Subſtance into a warm Braſs or Iron Cone, that the Scoriæ may more eaſily be ſeparated from the Regulus; and when it is cold, take out the Maſs, and ſeparate the Regulus. If a more pure Regulus be deſired, melt it a ſecond time with the Addition of a ſmall Quantity of freſh Nitre, and then pouring it into the Cone as before, a pure white Regulus will be obtained with the Star very perfect on its Surface.

Of this Regulus of Antimony Cups are made, which communicate an emetick Quality to Wine, which has ſtood in them for a Night's time. It is likewiſe made into little Balls or Pills, which are both Emetick and Cathartick, though ſwallowed a thouſand times, from whence they have the Name of the *Perpetual Pills*.

Reguli of Iron, Copper, Tin, Lead, Silver, and Gold, are made by melting theſe Metals with the *Regulus* of Antimony. The *Scoriæ* found above the *Regulus* in the Cone, are of a yellow or Saffron Colour, and fully impregnated with the Sulphur of Antimony.

The *Golden Sulphur* of *Antimony* is prepared different ways; and, on account of its excellent Qualities,

ties, has been called by different Names. It is termed *Sulphur*, becauſe it is inflammable like common Sulphur, and emits a fœtid Smell; but it differs from it in this, that it always retains ſome reguline Parts, and is therefore ſpecifically heavier. It is called *Golden Sulphur*, becauſe Chemiſts have imagined, that it came near the Nature of the Sulphur of Gold; and becauſe, when mixed with Silver over the Fire, it gives it a Gold Colour. Chemiſts likewiſe name it *Sulphur Embryonatum*, procured from the Saturnine *Magneſia*; believing it to contain ſome Portion of the Sulphur of Gold, got from Antimony, which they term *Magneſia Saturnina*. *Glauber* calls it *Panacea*, and the *univerſally Purging Sulphur*; and it was given, for a long time, by *Cardilucius*, a famous *German* Chemiſt, by the Name of the *Leſſer Centaury*. It is likewiſe the ſame Powder which has lately been ſo much in vogue, by the Name of *Kermes Mineral*, or *Powder of the Carthuſians*, becauſe it was firſt diſguiſed under that Title by Monks of that Order; and it is the ſame with *Ruſſel*'s Powder, which has been ſo famous in *England*. All the ways of preparing this Golden Sulphur may be reduced to two. The firſt and moſt common is, by firſt diſſolving the Sulphur of Antimony by ſome alkaline Salt, and then precipitating it by diſtilled Vinegar, or ſome other Acid. The ſecond is, by precipitating the ſame Sulphur of Antimony, firſt diſſolved by an Alkali, without the Help of any Acid. The firſt Golden Sulphur is made of the *Scoriæ* of Antimony, prepared with Tartar and Nitre in this manner:

Take the Salino-Sulphureous Scoriæ, *ſeparated from the Regulus, and boil them in a ſufficient Quantity of common Water. Strain the Decoction thro' Cap-paper, and then pour upon it diſtilled Vinegar, as long as the Mixture continues turbid. A*

fine Powder will remain at the Bottom of the Veſſel, the liquid Liquor being gently poured off by Inclination.

To make this Sulphur the ſecond Way, which is that uſed by the *Carthuſians* in making their *Kermes Mineral*,

Take of Antimony, four Pounds; Solution of fixed Nitre, one Pound; Rain-Water, three Pounds, and boil them for two Hours. Then the Boiling Decoction is paſſed through Cap Paper, and ſet in a quiet Place for twenty-four Hours, till a yellowiſh or ſaffron-coloured Powder ſink to the Bottom of the Veſſel, the Liquor remaining clear. This Liquor being poured off by Inclination, the Powder is firſt waſhed by frequent Affuſions of warm Water, till it is deprived of all its Salts; and then about four Ounces of Spirit of Wine are burnt over it, and it is afterwards dried, and kept for Uſe.

This Powder is looked upon as a kind of *Panacea*, or Univerſal Remedy. It ſometimes excites Vomiting, eſpecially when it meets with any Acid in the Stomach, and is ſometimes Cathartick, Diaphoretick, and Sudorifick, according as it is determined by the Diſpoſition of the Patient to act upon any one Humour more than on another. It is given from one to four Grains; or ſometimes, when it is deſigned only to attenuate and divide any Viſcidities in the Fluids, in the Quantity of half a Grain, repeated every three, four, or ſix Hours. In Acute Fevers, where there is a great Crudity and Spiſſitude of the Humours, it is given in ſmall Doſes with Succeſs. It changes the crude and ſerous Evacuations by Stool into a more bilious Conſiſtence, by attenuating the viſcid Bile, and ſo diſpoſing it to paſs off by Stool.

It

It is often given with Succeſs in the Beginning of the Small-pox and Meaſles, when they are apprehended to be of a bad Kind, at ſmall Doſes mixed with Bezoardick Powders or Abſorbents, ſuch as Crabs Eyes, Red Coral, Pearl, Egg Shells, Crabs Claws, and the like; for thus it excites a Spitting and Diaphoreſis, removes Anxieties, corrects the Lympha, and coagulated Serum, and raiſes ſuch an Effervescence in the Blood as tends to purify it. *Glauber* confirms theſe Virtues by the Examples of ſeven Children in the Small-pox. *Frederick Hoffman* commends the Uſe of this Powder in ſtubborn Autumnal Agues, becauſe it powerfully opens Obſtructions, eſpecially of the Liver, by which theſe Fevers are produced, eſpecially when taken in the Quantity of a Grain, mixed with detergent anti-febrile Salts; ſuch as the Salt of Wormwood, the febrifugous Salt of *Sylvius*, vitriolated Tartar, and the like. *Schroeder* ordered it in the Quantity of half a Grain, or a Grain, three or four times a Day, in the intermitting Fevers of Children, and commends it very much in correcting the Acrimony of the Serum, and eſpecially that of Tears, which give Pains in the Eyes, and produce very bad Ophthalmias. The ſame Author mentions a Woman labouring under Scorbutick Symptoms, and Defluxions of ſo acrid a Kind as to corrode her Lungs, and bring on a Spitting of Blood, who, by uſing this Sulphur of Antimony in very ſmall Quantities, corrected the Acrimony, and ſtopped the Motion of this Serum, and thereby prevented the Growth of a Diſeaſe, which muſt otherwiſe have been of very fatal Conſequence. *Hoffman* ſays it is a moſt effectual Remedy in ſuch Chronical Diſeaſes as ariſe from long Obſtructions of the Viſcera. In a Dropſy, for Inſtance, it is very properly mixed with the Filings or Crocus of Steel and Nitre; in Epilepſies, with all the Cinnabars; in the Scurvy, with the *Arcanum Duplicatum*; in Dyſenteries, with

the *Confectio de Hyacintho*; in a Dyſury, or Complaints of the Stone, with White Nettle or Pellitory Water; and even in Pleuriſies and Peripneumonias, he frequently gives it, in the Quantity of three or four Grains, in a Glaſs of ſtrong *Spaniſh* Wine, in Carduus Water, in an Infuſion of Red Poppies, or in the Juice of Dendelion, or Borage. *Junkerus* obſerves, that this Powder has in many Patients ſuſpended, in one Moment, the Effects of a ſuffocating Catarrh, ſometimes by producing a gentle Vomiting, ſometimes by Sweating, and ſometimes without any ſenſible Evacuation; and he adviſes it to be mixed in theſe Caſes with a certain Digeſtive Salt. It may be given very advantageouſly to Cachectick Girls, in the Quantity of a Grain mixed in ten Grains of *Crocus Martis Aperiens*, and of the *Arcanum Duplicatum*, the Doſe being repeated twice a Day. This Powder may be given either alone, or mixed with a little Sugar, and diluted with Wine or Water, or any other proper Liquor. It is likewiſe ſometimes given with Oil of Sweet Almonds, or in Conſerve of Violets, Borage, *&c.* in Form of a Bolus.

It is however to be carefully obſerved, that this Powder is not to be given till the Quantity of Blood has been leſſened, and all the Fluids ſufficiently diluted and attenuated; for, as by the Uſe of it, the Blood is very ſuddenly rarified, and put into a kind of Efferveſcence; if the Veſſels are before full, they muſt be ſtill more diſtended, by the increaſed Heat and Motion of the Blood and other Fluids, and hurtful Congeſtions may be found in the Viſcera. It ought therefore never to be given, till the Dangers from a Plethora are taken off, and till the Humours have been rendered fluid by great Quantities of Diluents often repeated.

The

The *Lixivium*, in which Antimony has been boiled, paſſed through Cap Paper, is recommended by ſome in Scabs, and other Diſeaſes of the Skin.

The Fumes which ariſe from ignited Antimony, may be collected in white, yellow, and red Flowers, if proper Veſſels are made uſe of, and, by adding powdered Glaſs, Sal Ammoniac, or Nitre, that they may riſe in greater Quantities; and theſe Flowers being edulcorated by frequent Lotions, are Emetick, Cathartick, and ſometimes Sudorifick, being given from two to twelve Grains.

From the *Martial Regulus* of Antimony, the Silver Flowers known by the Name of *Antimonial Snow*, are prepared in this Manner:

Take of the Martial Regulus, a pound; put it into a large Earthen Pot, placed in the midſt of burning Charcoal: Let a Cover be perforated in the Middle, and ſo placed as that there may be the Breadth of two Fingers between it and the Reguline Powder; and place another Cover over the Mouth of the Pot. Give a very ſtrong Degree of Fire for an Hour, till the Regulus is perfectly melted: Then, the Veſſels being ſuffered to cool, the Silver Flowers are found in Form of ſmall Spicula, *in the void Space between the firſt Cover and the Regulus.*

Theſe Flowers cauſe a Diaphoreſis and Sweat, and are therefore preſcribed in Malignant Fevers, and other Diſeaſes where a Diaphoreſis is required. They often cure Intermitting Fevers, given from ten to forty Grains, a little before the Fit.

The *Butter of Antimony*, called *Spuma Venenata duorum Draconum*, and the Cinnabar of Antimony, are to be made in this Manner:

Take

Take any Quantity of crude Antimony, and of Corroſive Sublimate; Being firſt powdered and well mixed, let them ſtand in a cool Cellar for one Night; then diſtil them in a Retort with a white ſhort Neck. The Fire being gentle at firſt, a white heavy Liquor comes over; then increaſing the Fire, the Butter ſometimes runs, ſometimes ſticks to the Neck of the Retort, in Form of Cryſtals or Ice. Theſe Cryſtals are melted by applying burning Charcoal to the Outſide of the Retort. As ſoon as a reddiſh Soot begins to ſtick to the Neck of the Retort, the Receiver, with the Butter of Antimony contained in it, is to be removed, and another put in its place; then, by giving a very ſtrong Degree of Fire, the Quickſilver will be ſeen to fall into the Receiver, and the Cinnabar will ſtick to the Neck of the Retort.

The Butter is rectified by being diſtilled in another Glaſs Retort, in a Sand Heat. It is a very powerful Cauſtick, and eats away all fleſhy Excreſcences, and ſtops a *Sphacelus*.

The *Cinnabar*, which ſticks in the Neck of the former Retort, is powdered, mixed with its own *Caput Mortuum*, then ſublimed by a gentle Fire. It is of a dark red Colour, and is recommended in all Diſeaſes of the Head, eſpecially in Epilepſies. It is likewiſe uſed in Venereal Caſes, and operates by Sweat. The Doſe is from ſix to fifteen Grains.

Pulvis Algaroth, or *Mercurius Vitæ*, is prepared from the Butter of Antimony, by pouring upon it large Quantities of warm Water, by which the Antimony diſſolved in the Butter is precipitated in Form of a white Powder, which muſt be edulcorated by frequent Lotions, and then dried. It vomits and purges very ſtrongly, being given from two to ſix Grains; but it is very improperly termed *Mercurius Vitæ*, ſince there is no Mercury in it.

The

The *Univerſal Antimonial Panacea* is prepared from the Butter of Antimony in this manner:

Take of Butter of Antimony, half a Pound; Cryſtals of Tartar well powdered, a Pound. Pour on them a Pint of common Water in a large Matraſs; mix and boil them in a Sand-heat for eight Hours; and while the Liquor is hot, drop into it a Pound of Ol. Tartar. per Deliquium. *After the Effervescence is over, ſtrain the whole through Cap-paper, and evaporate it to Dryneſs, in a Glaſs Veſſel, over a ſlow Fire. A Salt will remain at the Bottom, which is to be ſet in a cool Cellar, till it runs into a limpid Liquor, which muſt be carefully ſeparated from the Fæces. It purges gently upward and downward, being given from eight to twenty Drops in a proper Vehicle. It differs from Emetick Tartar only in running* per Deliquium.

Antimony has neither any emetick or cathartick Quality; (all its Effect being to increaſe inſenſible Perſpiration, or provoke Sweat) if its Sulphur be fixed by mineral Acids, as is ſeen in the Preparation of Bezoar Mineral; which is in this manner:

Put into a Retort any Quantity of Butter of Antimony, and drop upon it Spirit of Nitre, till the Effervescence ceaſes. Having then digeſted them for twelve Hours, draw off the Spirit in a Sand-heat. On the remaining Maſs, pour the ſame Quantity of freſh Spirit, and diſtill as before. Then calcine the remaining Maſs in a Crucible, till it ceaſes to emit Fumes; waſh the Powder in warm Water, and then dry it.

This Preparation is commended by *Van Helmont* in the Plague, and other malignant and contagious Diſeaſes,

Diſeaſes, as a moſt excellent Diaphoretick, given from half a Scruple to half a Drachm.

It may be made a ſhorter Way, by *Pouring four Ounces of* Aqua Regia *on an Ounce of Regulus of Antimony, and digeſting them for ſome Days in a gentle Heat; ſhaking the Veſſel every now and then, till all the Regulus is turned to a very white Powder, which is to be waſhed and edulcorated by a large Quantity of common Water.*

Diaphoretick Antimony, the Diaphoretick Calx of Antimony, or the Diaphoretick Mineral, is made by *Deflagrating ſucceſſively Crude Antimony, or its Regulus, mixed with triple the Quantity of Nitre, by which means the Sulphur of the Antimony is fixed by the acid Salt of the Nitre. The white Calx, which remains after the Deflagration, is to be well waſhed with warm Water, and then dried; and it may be given from ten Grains to a Drachm.*

It is an excellent Diaphoretick, when given inwardly in a ſufficient Doſe, reſolving Obſtructions, attenuating thick and viſcid Fluids, and forcing them either ſenſibly or inſenſibly, through the Pores of the Skin. It is preſcribed with Succeſs in all malignant Diſeaſes, in a Pleuriſy, Eryſipelas, and Diſeaſes of the Skin; and it makes an Ingredient in the *Pulvis Cornachini*, and *Pulvis Febrifugus* of *Morton*.

Various Tinctures are drawn from Antimony, and Authors are of various Opinions about them. We ſhall give one ſimple, and one more compounded Tincture, as Specimens of the reſt.

Take of Sal Tartar eight Ounces; melt it in an ignited Crucible, and then immediately throw into it by Spoonfulls ſix Ounces of Crude Antimony. Cover the Crucible, and let the whole be calcined in a ſtrong Fire for half an Hour; afterwards throw

throw the Maſs into a Braſs Mortar, and as ſoon as it hardens, reduce it to Powder. Throw this Powder into a large Matraſs, and pour upon it as much rectified Spirit of Wine, as will cover it to the Height of four Fingers Breadth. Then ſtopping the Veſſel very cloſe, digeſt for ſeveral Days, till the Spirit is tinged with a deep red Colour. Afterwards filter the Tincture, and keep it for Uſe.

This Tincture cauſes Sweat, ſeldom excites a Nauſea ſometimes, purges gently, and proves Diuretick. It is recommended in hyſterical Affections and Melancholy, to break the thick Parts of the Blood, in Apoplexies and Palſies, and to open Obſtructions in the Viſcera, in malignant Fevers. The Doſe is from four to twenty, forty, or even ſixty Drops, in a proper Vehicle.

The more Compound Tincture, much celebrated by the Name of *Lilium*, or *Tinctura Lilii Paracelſi*, is made from Metallick Reguli, in this manner:

Take of thin Copper-plates, an Ounce; ignite them in a red hot Crucible; and then throw in upon them half an Ounce of powdered Martial Regulus of Antimony; and the whole being preſently melted, add four Ounces of Tin, ſtirring the Maſs now and then with an Iron Rod; and when it is in perfect Fuſion, throw it into a well-greaſed Cone, and it will ſoon harden into a reguline metallick Maſs. This Maſs being reduced to Powder, is to be mixed with a Pound and half of Nitre, and half an Ounce of powdered Charcoal. Throw this Mixture by Spoonfulls into a red hot Crucible; and after each Projection, cover the Crucible, till the Fulmination is over. Calcine the whole in a very ſtrong Fire for two or three Hours, ſtirring it at times with an Iron Spatula. Then pour it into a Braſs or Iron Mortar; and before

before it has time to cool, powder it well, and immediately throw it into a proper Matraſs, and pour upon it as much Spirit of Wine, as will ſtand four Fingers Breadth above it. Digeſt in a Sand-heat for fifteen Days, and the Tincture will be what is called Tinctura Lilii, *or rather,* Tinctura Metallorum; *which is both Sudorifick and Diuretick; given from ten to a hundred Drops, in a convenient Vehicle.*

It is much commended in Malignant Fevers, Apoplexy, Palſy, Scab, Rheumatiſm, Scurvy, Dropſy, and a Suppreſſion of the Menſes.

Having now given a ſufficient Account both of the emetick and diaphoretick Preparations of Antimony, it is proper to ſay ſomething of the manner in which both theſe Effects are produced by them. Vegetable Acids being of their own Nature more attenuated, than thoſe which belong to Minerals, eaſily unite with the rarified Sulphur of Antimony, and thus ſeparating that Sulphur from the Vitriolick Acid contained in the Antimony, an Emetick Compound is formed; but Mineral Acids being more denſe, fix and wrap up the Sulphureous Parts of Antimony, ſo as not to ſtimulate the Stomach and Inteſtines, but to let them paſs freely into the Blood, before they can be diſengaged, and act according to their own Nature. Spirit of Wine deſtroys the Emetick Quality of Antimony, becauſe of the too great Proportion of Sulphureous Parts, by which the Saline *Spicula* are ſo much involved, as not to be able to act on the Stomach.

Antimony is the moſt excellent Emetick we have, and the moſt ſovereign Remedy in many Diſeaſes, when rightly exhibited. In giving Emeticks, three Things are to be conſidered; the Patient, the Diſeaſe, and the Medicine. We ought firſt of all to be informed, whether the Patient vomits eaſily; ſome Perſons cannot be made to vomit with any Doſe

of

of an Antimonial Medicine: Some are ſo weak as not to be able to bear the Fatigue and Straining of a Vomit at all; Some are ſo ſubject to a Spitting of Blood, that, by giving them a ſtrong Emetick, a fatal Hæmorrhage might enſue. We ought likewiſe to know whether the Patient has any conſiderable *Hernia*, in which Caſe violent Vomiting might produce very dangerous Conſequences; whether the Veſſels be ſo full, as that a Rupture of any of them may be apprehended; and, laſtly, whether the Patient, if a Woman, be with Child. In all theſe Caſes Vomits ſeldom ought to be ventured upon, and never without taking the greateſt Precautions before-hand.

The Second Thing to be conſidered is the Diſeaſe itſelf, and eſpecially, whether the Seat of it be in the Blood, or in the *Primæ Viæ*, which may be diſcovered by a Bitter Taſte in the Mouth, Nauſea, bilious Eructations, acid Vomiting, *&c.*

Some imagine that Emeticks can be of no real ſervice when the morbid Matter has reached the Maſs of Blood, or when the Diſeaſe proceeds from an *Ataxia*, or Deprivation of the Spirits, as in many Spaſmodick, Hyſterical, and Hypochondriacal Affections. But this is a Miſtake; for we find Antimonial Vomits are given with very great Succeſs in ſuch Caſes; not ſo much as they evacuate what was before contained in the Stomach; as by deriving the morbid Matter from the principal Parts, the Lungs, for Inſtance, or *Pleura*, when threatened or actually effected, into the Abdomen, from whence it is eaſily and readily carried out of the Body. And for this Reaſon *Hippocrates* very wiſely adviſes to have Recourſe to this Remedy in the Beginnings of ſuch Diſeaſes. In Convulſions, an Emetick by applying a Stimulus to the Fibres, of a contrary Nature to that from whence the Diſorder proceeds, very often gets the better of that morbid Cauſe, and thus cures the Diſeaſe. For the ſame Reaſon *Hippocrates* gave

Emeticks

Emeticks in Diarrhæas and Dyſenteries, that the Tendency of theſe Evacuations might be directed upward, and ſo deſtroyed. In Comatoſe Affections, Emeticks powerfully ſhake the Viſcera, increaſe the Oſcillations of the Nervous Fibres over the whole Body, and accelerate the Motion of the Fluids, or reſtore it when loſt in any particular Part, ſo as to make them paſs through the ſmalleſt Canals to their proper Emunctories. Thus we often ſee one Doſe of an Antimonial Emetick, prove likewiſe Cathartick, Sudorifick, *&c.* in a very plentiful Degree. In giving theſe Emeticks great Care ought to be taken that none of the abdominal Viſcera be inflamed, becauſe ſuch Inflammations might very probably be increaſed by the Strain of Vomiting. We muſt not likewiſe be miſled by all Kinds of Reaching, or Attempts to vomit; for theſe are many times owing to convulſive Contractions of the Stomach, which by giving an Emetick may be increaſed, or perhaps that whole *Viſcus* be inflamed.

Thirdly, ſuch Preparations of Antimony are to be choſen, as may be given with Safety, of which the Doſe may not be too great for the Strength of the Patient, and yet may anſwer the Intention of the Phyſician. Antimonials given in Powders often diſappoint Phyſicians, either by vomiting too much, or not at all. The Effects of Antimonial Wines are very uncertain, becauſe of the different Qualities of Wines. But the moſt excellent Preparation of this Kind is Emetick Tartar, which ought always to be given, diſſolved in a proper Liquor, and not in too ſmall a Doſe; becauſe if it is not ſtrong enough to have the deſired Effect, it will be apt to fatigue and torment the Patient with fruitleſs Nauſeas and Reachings. Too great a Doſe may likewiſe be dangerous, by exciting too violent Contractions in the Stomach, and Strainings of other Viſcera, ſo as to cauſe Spitting or Vomiting of Blood, long-continued Reachings without

without bringing up any thing, Convulſions, and Inflammations of the Viſcera.

If from any Doſe of Antimonial Preparations, either too violent or too long continued Vomitings ſhould happen, the beſt Method is to drink a Glaſs of Water or Ptiſane, acidulated with a few Drops of *Ol. Sulphuris per Campanam*, or Spirit of Vitriol; which will preſently check the Emetick Quality of the Antimony, and ſtop the Vomiting much more ſafely than Opium.

While the Emetick works, the Patient ought to drink very plentifully either luke-warm Water, Whey, or Veal or Chicken Water, with a View both to dilute the Contents of the Stomach to be thrown up, and to make the Vomiting more eaſy and leſs ſtraining. On the other hand, Oils, and all fat Subſtances, check the Force of the Emetick too ſoon, and prevent the Dilution of the Contents of the Stomach, and are therefore to be guarded againſt.

Beſides the Medical Uſes of Antimony, it is employed by ſeveral Artificers, to give the Silver Sound to Tin, in caſting Bells, making Metalline *Specula*, and Types for Printing, *&c.* It is likewiſe uſed by Goldſmiths in refining Gold, for when melted with that Metal, it deſtroys all other Metals that can be mixed with it, Silver it ſelf not excepted, and turns them to Droſs.

Art. II. *Biſmuth.*

Biſmuth, or Tin-Glaſs, named *Biſmuthum Officin. Plumbum Cinereum Agricolæ*, *Marcaſita Argentea Quorund.* is a Metallick, Fuſible, but not Ductile Subſtance, very brittle and heavy, and diſtinguiſhable from Lead and Tin by its Colour, which is ſometimes ſhining, like Silver; ſometimes of a faint Purple; reſembling the Regulus of Antimony, but

conſiſting of broader *Laminæ*, and ſtaining the Fingers. It is prepared by Artiſts, by being firſt torrified, and then melted into a Regulus. It is often found in Silver Mines, and where-ever the Miners find Biſmuth, they conclude they ſhall find Silver, and hence they call it the *Proof of Silver*. The Mines of Biſmuth are in *Bohemia* and *Miſnia*. Some pretend that it may be extracted from Cobalt melted into a Regulus, by a particular Proceſs, but this is not certain.

Biſmuth ſeems to have been unknown both to the *Greeks* and *Arabians*; for the *Arabian* Marcaſite was the *Lapis Pyrites*. It is very ſeldom uſed in Phyſick, though ſome prepare Flowers from it, which they ſay are Diaphoretick; but moſt Phyſicians have been afraid to uſe it inwardly, becauſe of the Arſenical Parts contained in it. The Magiſtery of Biſmuth is prepared by diſſolving the Metal in Spirit of Nitre, then precipitating it with a Solution of Sea-ſalt in Water. This Precipitate, being edulcorated by frequent Lotions, becomes a very white Powder, much valued by the Ladies as a Coſmetick, and much uſed by Dealers in Hair to improve the Colour of it when Dark or Red. Pewterers mix it with Tin to harden it, and give it a more ſhining Colour.

Art. III. *Zinch.*

ZINCH, named *Zinchum officin. Zinctum ſeu Marcaſita Pallida Schræderi*, *Zinch* vel *Tutenague Gallor.* is a Metallick Sulphureous heavy Subſtance, reſembling Lead in Colour, fuſible and ductile to a certain Degree, being very hard to break, inflammable, and volatile. It ſeems to have been quite unknown to the Antients, and even the Moderns knew very little about its Nature or Origin, till M. *Stahl*, now Firſt Phyſician to his *Pruſſian* Majeſty, explained it in his Diſſertation *De Metallurgia*.

It

It is extracted from the Lead Oar of the Mines of *Goſſelaar*, which Oar is very hard to melt, though it appears neither ſtony nor barren to the Eye, but rich and ſhining. Three Subſtances are ſeparated from it; Lead, Zinch, and a Kind of *Cadmia Fornacea*, which being melted with Copper, makes a Prince's, or Bath Metal.

The Furnace, in which this Oar is melted, is ſo diſpoſed as to have the Side and Back Wall of Brick, but the Foreſide is ſhut by Plates of a greyiſh fiſſile Stone, about a Finger's Breadth in Thickneſs. During the Time of the Fuſion, this Foreſide being much thinner than the reſt remains conſiderably cooler; and they increaſe this Cold by often ſprinkling it with Water, and covering it with wet Cloths. The Oar, which is put in the Furnace at one Time, is about twelve Hours in melting; and as ſoon as the Fuſion is begun, Bellows are ſet a blowing upon it, by which the Zinch mixed with the Lead is driven in Form of Flowers or Vapour againſt the Brick Walls, to which it ſticks, to about the Thickneſs of a Writing Pen, and of the Conſiſtence of very hard and half-vitrified Grey Tartar. At proper Intervals of Time, they open the Furnace and beat this Subſtance off from theſe Walls, becauſe otherwiſe, it would in time become ſo thick as to make the Capacity of the Furnace too ſmall for Uſe.

On the front, or ſtony Part of the Furnace, is found not only a Subſtance like that juſt mentioned, in Form of melted Stone, but alſo another reſembling melted Metal, with Streaks of a Subſtance half-burnt, or reduced to Aſhes, running through it. Therefore at the End of each Operation, or Period of Melting, having removed the burning Coals from the Bottom of this Part of the Furnace, they ſubſtitute others in their room, reduced to ſmall Pieces, and not burning. Then, by repeated Strokes of Hammers, they ſhake the Wall; and the Zinch

which ſticks to it runs down between the Laminæ of the half burnt Subſtance in Form of a melted Metal, emitting a white lucid Flame, and in a few Minutes Time would all fly off in a whitiſh or aſh-coloured Vapour, if it were not received and extinguiſhed by the Coal Duſt placed under it; for as ſoon as it mixes therewith, the Flame ceaſes, and it hardens into a Metal. When it is cold, they remove it, ſeparate it from the Coals, and having melted it again over ſuch a gentle Fire as is ſufficient to melt Tin, it is caſt into proper Maſſes or Pigs.

The Advantage to be made of this Metal is very uncertain, becauſe ſometimes the Workmen loſe all their Labour employed about it, either becauſe the Heat has been too great, the Bellows have been blown too fiercely, or through ſome other Neglect.

That Part, which ſticks to the Brick Walls, from whence it is broke off at proper Intervals, as has been ſaid, makes the *Cadmia* uſed in Prince's Metal; but before it is fit for that Uſe, it is mixed with the *Scoriæ* and other Refuſe of Metals, and expoſed in Heaps for a long Time to the open Air; where being penetrated to ſome Degree by the Air, or ſomething contained in it, it rarifies a little, and ſwells; and then it becomes fit to communicate a Gold Colour to Copper, by being melted with it. This Subſtance is called, very properly, *Cadmia Fornacea* by M. *Stahl*; for though its Origin be different from that of Tutty, the *Cadmia Fornacea* of *Agricola*, yet its Nature and Effects are nearly the ſame, for both equally give a yellow Colour to Copper.

The Lead is found melted at the Bottom of the Furnace; and the Workmen are of opinion that no Part of the Zinch remains in it, becauſe they think the Fire, to which the Lead continues ſo long expoſed, is more than ſufficient to evaporate all the Zinch.

Zinch

Zinch is a metallick Subſtance, but ſulphureous and perfectly Volatile. M. *Homberg* obſerved long ago, that when thrown into a red-hot Crucible, it emitted many Fumes; and when ſtirred with an Iron Rod, it preſently took Fire, and a white ſhineing Flame appeared like that which is ſeen by firing a Mixture of Nitre and Sulphur. At the ſame Inſtant, the whole Cavity of the Crucible was filled with very ſmall, white, light, ſmooth Filaments, like Threads of Cotton, or of a Cob-web. If theſe Filaments be carefully collected, and afterwards the remaining Zinch be ſtirred in the ſame manner as before, this Operation may be continued ſo long, till almoſt the whole Subſtance of the Zinch ſhall be converted into theſe Filaments or Flowers. By macerating theſe Flowers in diſtilled Vinegar, M. *Homberg* prepared an inflammable Oil of very great Subtilty, which he judged to ariſe from the Zinch; but I ſhould rather think was owing to the diſtilled Vinegar. The white Flowers taken inwardly are Sudorifick, and ſometimes purge both upwards and downwards, being given from four to twelve Grains. Externally applied, their Effects are in nothing different from thoſe of Pompholyx or *Nihil Album* of the Shops. They dry very powerfully, and without Acrimony; and gently aſtringe and conſolidate. They are much recommended by *Barbette* as a ſure Remedy in an Ophthalmia, and Flux of ſharp Lymph, being diſſolved in Roſe-water; by another in Fiſſures of the Nipples, being ſpread on a fine Linnen Rag; and by *Emanuel Koning*, in Ulcers, ariſing from a long Confinement in Bed. They are likewiſe of Service in drying Ichorous Ulcers.

Of Zinch and Copper melted together is made the fineſt Kind of Prince's Metal, ſo called from Prince *Rupert*, who is ſaid to have invented it. It is made in this manner:

Take of Copper, three Ounces; melt it in a Crucible, and while it remains in Fusion, add an Ounce and half of Zinch. Mix them well, and then immediately remove them from the Fire. The Mass, when cold, will be of a beautiful Gold Colour, and in some degree Ductile.

The Pewterers use Zinch in whitening and purifying Tin, mixing it in the Proportion of one to six hundred.

Art IV. *Cinnabar and Quicksilver.*

THE Name *Cinnabar* was in *Diascorides*'s Time given to several Substances; but it then properly signified a very red Substance, brought from *Africa*, of an astringent Quality; which, as *Diascorides* relates, was believed to be the Blood of the Dragon; and *Matthiolus* with good Reason suspects to be the same with that Gummy or Resinous Juice, still called by that Name in the Shops. The same Word was likewise applied to the Minium of the Ancients; or to that mineral Substance of a shining red Colour, from which Quicksilver was extracted; and in after-times, the two Words *Cinnabar* and *Minium* were used indifferently. At length, as the true Minium was not commonly found, and consequently often adulterated with Lead Oar calcined to Redness; that calcined Substance was alone called by the Name of Minium, and the Word Cinnabar appropriated to the other red Substance, from whence Quicksilver is extracted. These Names I shall here use in this common Signification; and accordingly I divide the Cinnabar of the Shops into native and factitious.

The native or fossil Cinnabar of the Shops, called *Minium* by the ancient *Greeks*, and *Anthrax* by *Vitruvius*, is a fossil, metallick, heavy Substance, not very hard, found sometimes pure, and sometimes mixed

mixed with Stones. Of the pure Cinnabar, there are ſeveral kinds; one of a Purple Colour inclining to Red, but which, by grinding, turns to a very beautiful Red; another of a blackiſh or Liver Colour, reſembling the *Lapis Hæmatites*; and a third of a yellowiſh Colour, which is commonly ſo rich in Quickſilver, that, when heated in the leaſt Degree, the Metal drops ſpontaneouſly from it.

The other kind of native Cinnabar is found in a fiſſile Stone formed of *Laminæ*, of an Aſh Colour. It has been likewiſe found in a white metalline Stone, and ſometimes in Form of a Gold or Silver Pyrites, ſuch as was dug up ſome Years ago in ſeveral Places of *Normandy*.

Native Cinnabar is found in *Hungary*, *Bohemia*, *Italy*, *Spain* and *France*; and every one knows of what Parts it is compoſed. Quickſilver is obtained from it, by diſtilling it either with Quicklime or Filings of Iron; and Sulphur may likewiſe be had in a ſmall Quantity, by boiling it in ſtrong Lixivia, and then pouring diſtilled Vinegar into the Decoction, the Quickſilver being firſt ſeparated. Beſides, a Cinnabar may be made by Art, exactly reſembling the native Sort, by only ſubliming Sulphur and Mercury together, in the manner that ſhall be hereafter related. The native Cinnabar, of which Painters of old were extremely fond, is now ſeldom uſed by them, becauſe the factitious Sort is cheaper, and anſwers all their Purpoſes equally as well. The internal Uſe of it is recommended by ſome Phyſicians in the Epilepſy, Vertigo, Madneſs, and all ſpaſmodick Affections. In theſe Caſes, they chooſe that of *Hungary* or *Carinthia*, which is of a ſparkling red Colour, and free from all heterogeneous Particles; and reject the dark or yellowiſh Kind, as being more impure. Sometimes, however, native Cinnabar, by means of ſome vitriolick, or even arſenical Particles aſſociated with it, happens to excite Nau-

ſeas, Vomitings, Anxieties, Heart-burns, &c. which I have myſelf, oftner than once, been a Witneſs to, even after the Cinnabar had been purged by frequent Waſhings; and therefore I always prefer either factitious Cinnabar, or that of Antimony, to the Native.

The factitious Cinnabar of the Shops, or Vermilion, is a red, heavy, denſe Maſs, friable, and marked with Silver or ſhining Streaks, conſiſting of Sulphur and Quickſilver, united by the Art of Chemiſtry. How this is done ſhall be preſently ſhown; But we muſt firſt conſider Quickſilver, as being one Part of the Compoſition.

Quickſilver called *Hydrargyrus, ſive Argentum Vivum Officin. Hydrargyrus Græcor. Mercurius Chemicor. Argentum fuſum Theophraſti. Argentum Mobile Ariſtotelis. Vomica Liquoris Æterni Plinii*, and *Zaiba* or *Zaback*, of the *Arabians*, is a fluid metallick Subſtance, cold to the Touch, of a ſhining Silver Colour, very heavy, volatile, and which will unite with moſt Metals, eſpecially Gold; to which it joins itſelf very cloſely.

Quickſilver is found ſometimes in its fluid Form in the Bowels of the Earth; and in that Caſe, it is firſt well waſhed with Water, to clear it from Earth; then ſometimes with Vinegar and Salt, to carry off all other metallick Parts; and laſtly, it is paſſed thro' Cotton or dreſſed Leather, and then has the Name of *Virgin Mercury*.

It is likewiſe found in Glebes, or in Form of a red ſulphureous mercurial Mineral, called *Cinnabar*, or of a ſtony Glebe, ſometimes red, ſometimes yellowiſh, ſometimes dark, and ſometimes of a Lead Colour.

From theſe Glebes, Quickſilver is extracted by ſimple Diſtillation ſometimes *per Aſcenſum*, the Mineral being put in Retorts, and ſet in a ſtrong Degree of Fire, by which the Quickſilver is rais'd in Fumes,

part

part of which ſticking againſt the Neck of the Retort, are there collected and run down into the Receiver, and the reſt are condenſed directly in the Receiver; which, for this purpoſe, is half filled with Water.

The other Way of Diſtillation is *per Deſcenſum*, which is performed in this manner, and is the moſt Expeditious, where the Mineral is rich. The Mineral, being beat ſmall, is put into Earthen Veſſels with very narrow Mouths, which are ſtopped with Moſs freſh gathered from Trees. Other Earthen Veſſels, like the former, but with wider Mouths, are buried in the Ground; and upon theſe the other full ones are inverted, their Mouths being let into thoſe of the lower ones. In this Poſition their Necks are firmly cemented together with a proper Lute, the lower Veſſels being wholly under Ground, the upper wholly above Ground. An Area of a ſufficient Extent being thus filled, a Fire is lighted round the Veſſels, by the Heat of which the Quickſilver drains through the Moſs, out of the upper Veſſels into the lower. At a proper time, they dig theſe up, and pour the Quickſilver into Bottles.

The Quickſilver Mines in *Hungary*, *Carinthia*, and *Friuli*, are very rich; there are alſo ſome ſuch Mines in *France*, eſpecially about *Montpelier*, and in ſome Places of *Normandy*.

When the Cinnabar contains a great Proportion of Sulphur, the Quickſilver cannot be extracted without adding ſomething to abſorbe the Sulphur, and ſet the Quickſilver at liberty, and render it fluid. Such Additions conſiſt in Wood-aſhes, Pot-aſh, Quick-lime, Filings of Iron, and the like, with which the Mineral is to be diſtilled.

Quickſilver is the heavieſt of any known Metal, except Gold, which is to Mercury nearly as four to three, and therefore ſinks in it, while all other Metals ſwim. Quickſilver may likewiſe be mixed or amal-

gamated,

gamated, as it is called, with all other Metals and metallick Subſtances, but moſt difficultly with Antimony, Iron, and Copper. It penetrates Metals, diſſolves and makes them brittle; whence it is by ſome reckoned the firſt Matter of all Metals, but without any ſufficient Foundation. It is therefore to be reckoned a metallick Subſtance *ſui Generis*, fluid, heavy, diviſible into very ſmall Parts, and extremely volatile. Fire ſeparates it into a very ſubtle Vapour, and in that Form diſſipates it intirely; whence Alchemiſts have given it the Name of the *Runaway Slave*. It is likewiſe eaſily diſguiſed many ways, and may again be reſtored to its priſtine Form; whence it has got the Name of *Proteus*.

It readily unites with Sea-ſalt, and thus joined a very gentle Heat ſublimes them in Form of a white, ſaline, cryſtalline Maſs, known by the Name of *Corroſive Sublimate*. It does not ſo eaſily join with Nitre or Vitriol. It is more eaſily diſſolved by the Acid of Nitre, but very difficultly by Oil of Vitriol. Alcaline Salts work no Change in it; but it is in ſome meaſure fixed and extinguiſhed by ſulphureous Salts. By long Trituration with Sulphur, it is changed into a very black Maſs; which being ſublimed by the Force of Fire becomes an intenſely red ſhining radiated Maſs. When Quickſilver has been diſſolved by Spirit of Nitre, and that Spirit again evaporated by Fire, it remains in Form of a red Powder; but if the ſame Solution be precipitated with *Sal. Tartari*, it appears a Saffron-coloured Powder at the Bottom. With Sea-ſalt, it gives a white Precipitate; with Lime-water, a yellow.

It is very difficult to analyſe Quickſilver, becauſe as ſoon as any conſiderable Degree of Fire is applied to it, it flies off, and thus baffles the Pains and Induſtry of the Artiſt. However, by being long expoſed to a very gentle Fire, in a Glaſs Veſſel with a very long Stem, it begins by degrees to be turned to

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a greyiſh Powder, which by a long Digeſtion becomes yellowiſh, and at length red.

Thus reduced to a Calx, it is heavier than when fluid, and alſo a little more fixed in the Fire; but if it be urged with a ſtrong Fire, it evaporates, leaving only a little fixed light Earth behind. If this Calx be burnt gently with Charcoal Duſt, it turns immediately to running Mercury. By long Trituration, it may likewiſe be reduced to a greyiſh Powder, ſome Particles detached from the Body, with which it is rubbed, hindering the immediate Contact of its Particles. When expoſed to the Focus of a great Burning-Glaſs, it preſently evaporates in Fumes, without leaving any Remainder; but if the Calx of Mercury calcined *per ſe* is thus expoſed on a Tile, it firſt melts into a Subſtance like Glaſs, then evaporates ſpeedily, leaving a ſmall Quantity of a browniſh Powder behind, which afterwards vitrifies. But if the ſame Calx be laid in the Focus of ſuch a Glaſs on a Piece of Charcoal, it melts into Glaſs in the ſame manner, then runs on the Coal, and becomes again pure Quickſilver before it evaporates. Hence it ſeems evident, that Quickſilver conſiſts of a volatile, vitrifriable Earth and Sulphur, to which it owes its metalline Splendor and Fluidity; for when deprived of its Sulphur by Calcination, it loſes both its Colour and Fluidity; but if theſe Particles of Sulphur be again reſtored to it, it recovers both again.

Quickſilver was by the Ancients ranked among Poiſons. *Diaſcorides* aſcribes pernicious Effects to it; and from his Authority no doubt it was that *Galen* reckoned it highly Corroſive; for he owns he never made any Trial of it himſelf. The Name of it is not found in *Hippocrates*, whence it is probable, that it was not in uſe in his Time. But before *Avicenna* it was uſed externally, tho' ſeldom internally, being ſtill reckoned a Poiſon by moſt Phyſicians.

ſicians. *Actuarius* ranks it, however, among Medicines; but *Meſues* applied it only for curing Cutaneous Diſeaſes, though *Avicenna* obſerves that many had drank it without any bad Effect, and that it paſſed through the *Anus* unchanged. About two hundred Years ago, though it was ſtill believed by ſome to be poiſonous, it began by many to be uſed inwardly; they having obſerved, as *Fallopius* relates, that it was given in that Manner by Shepherds to their Cattle to kill Worms, without any bad Effect; whence they concluded that it might be ſafely given to Men likewiſe, and that therefore Crude Mercury was not to be reckoned a Poiſon. Thus *Braſſavolus* and *Carolus Muſitanus* tell us, they gave it to Children troubled with Worms, from two to twenty Grains, and always with ſome Succeſs; and that ſeveral Midwives gave it to Women in difficult Labours, without any bad Conſequence, though perhaps not always with any viſible good Effect. *Matthiolus* relates, that ſome Women with Child drank each a Pound of Quickſilver to procure Abortion, without any bad Sequel; and it is commonly known that the Workers in Quickſilver take this Method to cheat their Maſters of conſiderable Quantities, by firſt ſwallowing it, and then voiding it with their Fæces, from which it is eaſily cleanſed by ſimple Waſhing. It muſt, nevertheleſs, be owned that the Uſe of it, whether outwardly or inwardly, can never be long continued without Miſchief; for the Miners, and others employed about it, though of the ſtrongeſt Conſtitutions imaginable, ſeldom remain for four Years in that State, but are ſeized with Tremblings, and Palſies, and all die miſerable. By an injudicious Uſe of it, whether outwardly taken, or inwardly, the Nerves are likewiſe affected, weakened, corrugated, and contracted; whence Tremblings, Spaſms, Palſies, and too great an Attenuation of the Fluids,

which

which often brings on a fatal Salivation, Ulcers in the Mouth and Throat, and incurable Looſeneſſes.

Quickſilver, judiciouſly adminiſtred, is however undoubtedly a moſt excellent Medicine; it opens the Pores, ſmall Veſſels, and Ducts of the Glands; reſolves obſtructed Humours, attenuates thoſe that are too thick and viſcid, eſpecially the Lympha, and diſſipates Concretions, even in the remoteſt Parts of the Body. On all theſe Accounts it is found to be of ſingular Service in Tumors, ſwelled Glands, Schirrhous Spleen, Meſentery or Liver, Ganglions, Strumæ, and other ſuch Diſeaſes. It likewiſe blunts the Acrimony of the Fluids, and hence performs Wonders in Venereal Tumors, Buboes, and Ulcers, in cutaneous Puſtules, Scabs, and other Affections of the Skin; univerſal Remedies of the Preparatory, and eſpecially of the Evacuating Kind, having not only gone before the Uſe of Mercury, but being continued along with it. For, as all theſe Diſeaſes ariſe from a viſcid Serum, become Cauſtick by a long Stagnation, if it be divided and reduced to a fluid State by Quickſilver, before a Paſſage is prepared for it out of the Body, it muſt either exert its Efficacy on the Part where it was firſt lodged; or, by removing to other more noble Parts of the Body, bring on Symptoms more dangerous than the firſt. Therefore, before the Patient begins to take Mercury in any Form, his Body ought to be cautiouſly prepared by Bleeding, to leſſen the Plenitude of the Veſſels; by warm Bathing, and the Uſe of diluting Medicines, that the Humours may become more fluid, and the ſolid Fibres ſofter; as alſo by Purging, that a Way may be opened for the Paſſage of the diſſolved Humours out of the Body. Theſe Paſſages are likewiſe to be kept open during the Time that Quickſilver is taken, leſt the Humours ſhould be intercepted in their Courſe, and be turned a more dangerous Way; and the Patient ought to be kept warm,

warm, leſt Cold ſhould ſtop or diminiſh inſenſible Perſpiration, which ought likewiſe to be encouraged by gentle Exerciſe.

Quickſilver, not only taken inwardly, but alſo by Unction, evacuates the Humours by Stool, Sweat, and inſenſible Perſpiration; but the moſt common Method of its Operation is by the Evacuation of a mucous *Saliva*, whence it is termed a *Salivation*. This Way of Purging was entirely unknown to the Antients, and is thought the moſt effectual Remedy for venereal Diſeaſes; for the Cure of which it was firſt uſed by *Jacobus Carpenſis*, a Phyſician of *Bologna*.

From whatever Country Quickſilver is brought, that is thought the beſt which is moſt pure, of the moſt ſhining white Colour, moſt fluid, and which being evaporated leaves no Remainder behind it. That is to be rejected which is of a livid or pale Colour, which does not run into Globules exactly ſpherical, but oblong, reſembling little Worms or Tears, which are ſure Signs that it is adulterated with Lead, Biſmuth, or ſome other Metal.

Native, or Virgin Mercury, ought always to be purified before it is uſed inwardly, becauſe it is poſſible it may be ſtill mixed with ſome metallick, ſulphureous, or arſenical Particles. The moſt ſimple Way of purifying Quickſilver is, by paſſing it through dreſſed Leather, by which it is purged from the more groſs Parts that may be mixed with it. Some waſh it with Vinegar and Salt; but it is much ſafer to diſtill it in a Retort with Quick Lime, Potaſh, or Filings of Steel, by which Method Mercury is obtained more pure than by any other.

Mercury is uſed in Phyſick, either Crude, that is, being only firſt purified, or differently prepared. Crude Mercury is given in Subſtance to kill Worms, from a Scruple to three Drachms; being firſt well rubbed with Sugar in a Glaſs Mortar, till it is diſſolved

ſolved into inviſible Parts, adding a Drop or two of Oil of Sweet Almonds to keep it from returning to its native Form. Decoctions of Quickſilver are likewiſe much uſed, being made by boiling a Pound of Mercury in ſix Pints of Water for an Hour. The clear Liquor is given both to Children and Adults for their common Drink. Quickſilver is a great Enemy to all ſorts of Vermin, as well as to Worms; and it ſuddenly kills or baniſhes them, being applied in an Ointment to any Parts of the Body where they are found.

Crude Mercury is likewiſe given in very large Quantities in the Iliac Paſſion, even to two or three Pounds; and it very often ſucceeds in removing the Obſtruction; but if the Obſtruction be very great, ſo that the Mercury remains a great while in the Inteſtines, it may do them an Injury merely by its great Weight. To cure the Itch, Quickſilver Girdles are uſed with very good Succeſs, when the Precautions above-mentioned are duly obſerved. The Quickſilver is to be beat up with the White of an Egg, till both are turned to a thick Froth, which is rubbed on a Cotton Girdle, and, when dry, is wore round the Loins.

Mercurial Ointments cure the Itch, and all Diſeaſes of the Skin. It is uſed in the *Emplaſtrum de Ranis cum Mercurio* of *Vigo*, in the *Unguentum Neopolitanum*, and in Mercurial Pills, of which the beſt Form, in my Opinion, is this:

Take good Rhubarb, Trochici, Alhandal, and Agaric, of each a Drachm; Scammony, and waſhed Aloes, of each a Drachm and half; of Quickſilver killed in Turpentine, half an Ounce; of Syrup of Peach-Flowers, a ſufficient Quantity to make a Maſs of Pills. The Doſe is from a Scruple to a Drachm and an half, in Venereal Complaints, Rheumatiſms, and Obſtructions of the Meſentery and

and Viſcera. In the Pox theſe Pills are taken by ſome every Day, or every other Day.

No Subſtance has been treated in ſo many different Manners by Chemiſts as Mercury, both for Medical and Alchemical Uſes; for ſince they believed it to be the Firſt Matter of all Metals, they have left nothing untried to fix it; but, though after all their Labours, they have not been able to gain their propoſed End; they have, however, enriched the *Materia Medica* with many excellent Remedies. It is here to be obſerved, that ſome Chemiſts call the Preparations of Mercury, either by the Names of Oils or Salts, which are not to be looked upon as Principles or Subſtances extracted from that Metal, but as ſaline or oily Bodies mixed with it; for hitherto no Art has been able to reduce Mercury to its firſt Principles; for, being extremely volatile, it flies off, before any thing of its Texture can be diſcovered.

The moſt common Preparations of Mercury are *Mercurius Præcipitatus per ſe*, red, white, and yellow Precipitates, which laſt is named *Turbith Mineral*, Violet or black Precipitate, Æthiops Mineral, Factitious Cinnabar, Corroſive Sublimate, *Mercurius Dulcis* called *Aquila Alba*, and the Mercurial *Panacea*.

Mercurius Præcipitatus per ſe, or the Calx of Mercury, is made in this manner:

The Mercury firſt well purified is put into a flat-bottom'd Glaſs, called Vas infernale, *which being ſet in a Sand-heat, the Fire is gradually increaſed, and the Metal turns firſt to an Aſh-coloured Powder, and at length becomes very Red. It cauſes Vomiting, purges downward, and provokes Sweat, being given from two to ſix Grains.*

Red

Red Precipitate is made *By dissolving four Ounces of crude Mercury, in a sufficient Quantity of Spirit of Nitre. The Solution is evaporated to Dryness in a Sand-heat; and the remaining Mass is of a pale yellow Colour, which by increasing the Fire to the third Degree becomes red like Coral, and is thus kept for use. It is employed externally in eating away fleshy Excrescences, or Pustules; for being sprinkled upon any Plaister, or mixed in an Ointment it corrodes mildly and without pain. Some Chemists distill Spirit of Wine, well rectified, from this Precipitate; and this Operation being several times repeated, the Medicine becomes the* Arcanum Dulcificatum; *and may safely be given inwardly either with Purging or Diaphoretick Ingredients, both which it assists. The Dose is from two to six Grains.*

White Precipitate is made *By dissolving two Ounces of Quicksilver in three Ounces of Spirit of Nitre, in a Glass Vessel, in a Sand-heat. In another Vessel, half an Ounce of Sea-salt is dissolved in six Ounces of common Water. And then the two Solutions being mixed, the whole becomes turbid, and the Mercury falls to the Bottom of the Glass in Form of a white Powder, till the Liquor becomes Limpid, which then is to be gently pour'd off.*

This Powder taken inwardly purges downward, and sometimes vomits; and being used for a Continuance of time, it will bring on a Salivation. It may be given from four to fifteen Grains. When applied externally in Ointments and Pomatums, it cures all Diseases of the Skin, and may be mixed with these in the Proportion of a Drachm to an Ounce.

Yellow Precipitate, or *Turbith Mineral*, is made *By dissolving four Ounces of very pure Mercury in*

sixteen Ounces of Oil of Vitriol. Distill this Solution in a Retort, till only a white Mass remains, which being powdered and edulcorated by frequent Washings with warm Water, becomes yellow, and is then dried and kept for Use. It is a very strong Emetick and Cathartick, and is chiefly used in Venereal Complaints, from two to six Grains.

Green Precipitate is made thus: *Take of pure Mercury, four Ounces; of thin Copper-plates, an Ounce. Dissolve them separately in Spirit of Nitre, then mix the Solutions, and evaporate to Dryness. The remaining Mass being reduced to Powder is digested with distilled Vinegar, poured on it to the Height of six Fingers Breadth above it. When the Vinegar is tinctured green or bluish, it is poured off, and more put in its Place, as long as the Mass can communicate any Tincture. Then all these Tinctures being mixed together are evaporated to the Consistence of Honey; and this Substance when cool grows hard, and being reduced to Powder is kept for use.*

It purges both upward and downward, and is reckoned by some a Specifick in a virulent Gonorrhæa. The Dose is from two to eight Grains, to be repeated every Day, or every other Day, till the Running ceases. Others reckon it an unsafe Medicine, because of the poisonous Quality of the Copper.

The *Violet* or *Black Precipitate*, called by some *Diaphoretick Mercury*, or the *Mercurial Panacea*, is usually made in this manner:

Take of pure Sulphur four Ounces, and melt it in an earthen Vessel over a Charcoal Fire. Into the melted Sulphur throw, with great Care, six Ounces of very clean Quicksilver, stirring it constantly

ſtantly with an Iron Rod; and when they are perfectly incorporated, add four Ounces of Sal Ammoniac. Let this Maſs be ſublimed in a Glaſs Veſſel; and mixing the Sublimate with the Fæces, let them be again ſublimed, and repeat this Operation four times; then ſeparate the heavy blackiſh or bluiſh Maſs, at the Bottom of the Veſſel, from the other light, rare, yellowiſh Subſtance, which is of no Uſe.

This Precipitate is Diaphoretick, and much commended by ſome in Rheumatiſms, the King's-Evil, Venereal Diſeaſes, Aſthma, Epilepſies, for Killing Worms, and for Opening all Obſtructions. The Doſe is from twelve Grains to half a Drachm.

Æthiops Mineral is prepared with four Parts of pure Quickſilver, and three Parts of Flowers of Sulphur, by rubbing them in a Glaſs Mortar, till all the Globules of the Quickſilver diſappear, and the Maſs be reduced to a fine blackiſh Powder, which when kept ſome time turns very black. It is a Remedy for Worms, in the Venereal Diſeaſe, Itch and other Eruptions, and in the King's-Evil; and is likewiſe recommended for the Hæmorrhoids, the Gout and Rheumatiſm. The Doſe is from fifteen Grains to two Scruples, and it ſometimes is repeated Morning and Evening, a Cathartick being intermixed every fourth Day. It ſeldom raiſes a Salivation, but always promotes a Diaphoreſis, and ſometimes purges. Some make this Preparation by firing the Sulphur and Mercury mixed in equal Parts; but this burning is to no purpoſe.

Factitious Cinnabar is made by *Mixing ſlowly three Parts of Quickſilver with one Part of melting Sulphur, ſtirring it without Intermiſſion till all the Mercury diſappears. The Maſs being then cooled,*

reduced to Powder, and put into a proper Veſſel, is ſublimed with a graduated Fire, into a red-ſtreaked ſhining Maſs, with has the ſame Virtues with Æthiops Mineral; and is ſometimes ordered as a Fumigation to excite a Salivation in the Lues Venerea.

Corroſive Sublimate is ſpeedily made in this manner: *Take any Quantity of pure Quickſilver, diſſolve it in* Aqua Fortis, *and diſtill the Solution to Dryneſs. With the remaining ſaline Maſs, mix four Parts of decrepitated Sea-ſalt, and ſublime in a Glaſs Matraſs with a ſhort Neck. What riſes is a white ſaline cryſtalline Body, called* Corroſive Sublimate, *or the* Poiſonous Dragon.

When taken inwardly, it proves a corroſive Poiſon, of the ſame Nature with Arſenick; but the Symptoms it cauſes are quicker and more terrible. It ſuddenly corrodes the Throat, Stomach, and Inteſtines; and its cauſtick Force is to be weakened by the ſame Remedies, which were mentioned in treating of Arſenick. It is uſed externally to conſume proud Fleſh, and to deterge old Ulcers. The Phagedenick Water is made of it by diſſolving half a Drachm in a Pint of Lime-water. The Solution is yellowiſh, and to be kept for uſe.

Of this Corroſive Sublimate is likewiſe made *Mercurius Dulcis*, called *Dulcified Sublimate*, *Aquila Alba*, the *Dragon Tamed*, and *Calomel*, in this manner:

Take of Corroſive Sublimate, ſixteen Ounces; grind it throughly in a Marble-mortar, pouring in by ſlow Degrees twelve Ounces of crude Quickſilver, well purified. Continue to grind them, till the whole Quickſilver diſappears, and then the Powder will be of a Leaden Colour. This Powder put into proper Glaſſes, to the Height of an Inch

or

or two, is ſublimed by a ſlow gradual Fire into a white Maſs, which being ſeparated from the Fæces, and powdered, is again ſublimed.

This Preparation purges gently, divides all viſcid pituitous Humours, kills Worms, and is reckoned a ſovereign Medicine in Venereal Diſeaſes. The Doſe is from ſix to thirty Grains in Pills or a Bolus; and if the uſe of it be continued for ſeveral Days, it will raiſe a Salivation. It is moſt commonly mixed with other purging Medicines, and ſome chooſe to give it in this manner every other Day, in order to cure the Pox without Spitting. It enters the Mercurial Pills, and the Aperient Cathartick Electuary of *Charas*.

The laſt Preparation of Quickſilver is the *Mercurial Panacea*, ſo called from its extraordinary Qualities; and which may be juſtly named *Panacea Ludoviciana*, becauſe the Secret was bought and made publick by *Lewis* the Fourteenth. It is made in this manner:

The crude Quickſilver is purified by being firſt made into Cinnabar, and then extracted from thence in the manner already ſhown. Of this Mercury revivified from Cinnabar, is made corroſive Sublimate, which muſt be thrice ſublimed; twice with Sea-ſalt, and once without any Addition. Part of this Sublimate is again reduced to running Mercury, by being diſtilled with Regulus of Antimony. Of this revivified Mercury, and the remaining corroſive Sublimate, is made Mercurius Dulcis, by nine Sublimations. Laſtly, this Mercurius Dulcis is put in Digeſtion for three Weeks, with any aromatized Spirit of Wine, and afterwards ſeparated from the Liquor, and dried for Uſe.

This is undoubtedly an excellent Medicine in all Venereal Affections; and is recommended likewiſe in Rheumatiſms, Obſtructions of the meſenterick Glands, King's-Evil, the Itch, Tetters and Worms. Some uſe it likewiſe for the Scurvy; but, in my Opinion, no Preparation of Quickſilver can be proper in that Diſtemper. The *Panacea* more readily ſalivates than *Mercurius Dulcis*, becauſe this latter often paſſes off by Stool.

The following are approved Forms of giving Mercurial Preparations, in different Intentions:

Take of Æthiops Mineral, *a Drachm and an half*; *of* Coralline *in Powder, a Drachm*; *Oil of Tanſey, three Drops: Mix them, and make them into a Powder. The Doſe of which is from fifteen to thirty Grains, to be given Morning and Evening, to kill Worms.*

This Powder may be made into Pills or a Bolus with Syrup of Wormwood; and when it has been continued three or four Days, the following purging Bolus is proper to be given.

Take Mercurius Dulcis, *Rhubarb, and Pulvis Cornachini, of each equal Parts; mix them, and make them into a Powder. Take of this Powder from one Scruple to a Drachm, Conſerve and Syrup of Wormwood a ſufficient Quantity to make a Bolus.*

Take of Æthiops Mineral, *half a Drachm; Powdered Millepedes, and Gum Ammoniac, of each a Scruple; Conſerve of Marigolds a ſufficient Quantity to make a Bolus, to be taken every Day for three Days for the King's-Evil, and every fourth Day take the following purging Bolus:*

Take

Take Mercurius Dulcis, *and Gum Ammoniac, of each fifteen Grains; Trochiſc. Alhandal, ten Grains; Syrup of Peach Bloſſoms, a ſufficient Quantity to make a Bolus.*

Take of the Mercurial Panacea, *a Drachm; of powdered Rhubard, three Drachms; Balſam of* Capivi, *half an Ounce: Mix and make an Opiate, the Doſe of which is a Drachm, to be taken every Morning, purging every third or fourth Day with the Mercurial Pills above mentioned, or with the following:*

Take Mercurius Dulcis, *and Diagridium, of each a Drachm; Trochiſc. Alhandal, a Scruple: Powder them, and mix them with a ſufficient Quantity of Turpentine to make Pills for five Doſes.*

Among all the Virtues of Quickſilver, that for which it is moſt celebrated is its Efficacy in curing Venereal Diſtempers, for which it is juſtly eſteemed the only Specifick, by expelling the morbid Matter, together with a large Quantity of tough and viſcid Lympha; for the Cure of theſe Diſtempers is never to be depended on, except it is brought about either by a copious Purging, or a Salivation. To raiſe a Salivation, ſome have Recourſe to Mercurial Fumigations, ſome uſe Mercurial Plaiſters or Ointments, others give Mercury inwardly, differently prepared.

To raiſe a Salivation by Fumigation,

The Patient being firſt duly prepared, is placed naked in a proper Chair, or Stove, and ſmall Pieces of Cinnabar, to the quantity of two or three Drachms, being thrown upon live Charcoal, the Steam is received through the Pores of the Skin. The Patient grows ſoon very warm, and ſweats

more or less, in Proportion to his Strength. This Operation is repeated every Day, or every other Day, till the Gums begin to swell and ulcerate, and the Spitting rises to a sufficient Quantity.

Unction is thus performed:

The Patient, duly prepared, and properly cloathed, being placed near a Fire, the Parts to be anointed are first rubbed till they are warm and red, and then the Mercurial Ointment is applied, the first Day to the Feet, Knees, and Groins; the next Day to the Buttocks, Wrists, Arms, and Shoulders; and this Method is repeated every Day, or every other Day, according to the Strength of the Patient, till he spits plentifully, that is, to the quantity of three or four Pints a Day. He ought to be anointed in a warm Place, but at a little Distance from the Fire, lest the Heat should make the Ointment run too soon. About two Ounces of Mercurial Ointment is sufficient at each time; and, by being once rubbed, some Persons will be plentifully salivated. Others require three Rubbings; but seldom more. Before each Rubbing, the Patient's Throat ought to be carefully examined, to see if any Signs of a Salivation appear. These Signs are Heat and Dryness in the Mouth and Gums, swelling in the salival Glands, frequent Spitting, an Inflammation in the Orifices of the salival Ducts, Ulcers which gradually increase, and at length a copious Discharge of laudable Matter. Too plentiful a Spitting is very much to be guarded against, especially if the Salivation has been hastily raised; and if that should happen, we must presently have recourse to Purging, which is to be repeated as often as is necessary, laying aside the Cloths daubed with the Ointment.

Some

Some prefer Plaiſters to Ointments; and it is certain, that the Effects of them are ſlower and milder. They are applied to the ſame Places, and with the ſame Precautions, as the Ointment. Others, in fine, are of Opinion, that a Salivation is moſt ſafely raiſed, and afterwards either increaſed or diminiſhed, as the Phyſician ſhall judge the Patient's Strength to require, by the internal Uſe of the Mercurial *Panacea*; and it muſt be owned, that both Fumigations and Ointments are hazardous and uncertain; for Fumigations ſometimes affect the Head, and produce direful Symptoms; and Ointments raiſe ſometimes too great a Salivation, ſometimes none at all; becauſe a greater or ſmaller Quantity of the Quickſilver enters the Blood, according as the Pores of the Skin are wider or narrower; and this can never be known but by the Event. But the Uſefulneſs and Excellency of the *Panacea* conſiſts in this; that being given at firſt in ſmall Doſes, the Quantity of it may be increaſed at Pleaſure, till the Patient ſpits the Quantity required; and this Quantity is either increaſed, diminiſhed, or continued the ſame at the Pleaſure of the Phyſician, without any Fear of Danger. The other Methods of Salivating are not however altogether to be rejected; for it is ſometimes neceſſary to mix them with the Uſe of the Panacea, which being ſlow in its Operation, the Ointment is to be uſed once or twice in ſome Caſes to bring the Spitting ſpeedily to the deſired Pitch. In Perſons therefore of a very ſtrong Conſtitution, the Salivation ought to be raiſed by Unction; and afterwards kept up by the Panacea; but in weak Habits, the Panacea alone is to be depended on; or, at leaſt, with the Aſſiſtance of only a few Plaiſters. In Caſes of violent continual Pains, Nodes, or Exoſtoſes, Plaiſters are likewiſe to be applied; as in the pocky Itch, Herpes, Ulcers, Scabs or Puſtules ſpread over the Body, Ointments are moſt proper.

Laſtly,

Lastly, Fumigations are usefully mixed with Unctions, or with the *Panacea*, when there are Ulcers, Verrucæ or Condylomata, in the *Pudenda* or *Anus*.

The Method of Salivating by the *Panacea* is this:

The Patient is first of all to be let Blood once or twice, according to his Strength, and the Fullness of his Vessels. The Day after the last Bleeding, he ought to take a purging Potion, and at a proper Distance of Time, such as two Hours or more, four Grains of Tartar Emetick dissolved in weak Broth. The next Day, he should go into a warm Bath, and repeats Bathing once or twice a Day for six or seven times.

By these Preparations the *Primæ Viæ* are cleared of their gross Contents, the Vessels are relaxed, the Blood circulates more freely, the Juices become more fluid, and the solid Fibres softer or less rigid. We ought, however, to take care not to weaken the Patient too much, by Bleeding, or Bathing, lest he become not able to bear a due Salivation; neither are Catharticks to be repeated, because they retard the Spitting; for tho' Venereal Diseases may be cured by Purging, yet Salivation is much more safe.

The Patient's Body being thus prepared, the next Day after his last Bathing, he ought to take ten Grains of *Panacea* in the Morning, and five in the Evening; the second Day, fifteen Grains in the Morning, and eight in the Evening; the third Day, twenty Grains in the Morning, and ten in the Evening; the fourth Day, twenty-five Grains in the Morning, and fifteen in the Evening; and thus the Dose may be increased every Day from five to ten Grains, till the Quantity spit in twenty-four Hours amount to three or four Pints; or the Evacuations by Stool, are proportionable to that Quantity. No more *Panacea* is from thence to be given, except the Eva-

Evacuations begin to leſſen, before all the Venereal Symptoms diſappear. In that Caſe, Recourſe muſt again be had to the *Panacea*, beginning with the ſame Doſe which the Patient took laſt, and continuing it till we are aſſured of a perfect Cure. If after the *Panacea* is left off, the Salivation ſhould increaſe, a Cathartick ought immediately to be thrown in, and frequently repeated at ſmall Intervals. If during the Salivation, a Looſeneſs ſhould happen with violent Gripings, and a Dyſentery be apprehended, detergent, lenient and ſtrengthening Clyſters are to be exhibited. During the whole time of the Cure, the Patient's Nouriſhment ought to conſiſt of Broths, Eggs, Panada, and other Spoon-meats, but of nothing ſolid.

The Panacea *ought to be given in ſome proper Conſerve, drinking a Draught of Broth after each Doſe; and for three or four Hours afterwards, no kind of Nouriſhment ſhould be given. When the Effects of the* Panacea *are quite over, the Patient ought to be purged two or three times, and then uſe a Milk Diet for a conſiderable Time.*

Nothing can be with certainty fixed concerning the Quantity to be evacuated in a Salivation; for after the moſt copious Evacuations, ſome Patients have remained uncured; whereas others have been perfectly reſtored after a very ſlight Courſe. This therefore muſt be left to the Judgment of the Phyſician; as alſo whether the Patient has Strength to go through a Salivation, when the Venereal Diſeaſe is complicated with others. Thus in a Conſtitution inclining to a Hectick Fever, where the Blood being already too much diſſolved, paſſes out of the Body in profuſe Sweats; the Mercury by diſſolving it ſtill more, would undoubtedly evacuate it by all the Emunctories of the Body, and Life along with it.

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In Scorbutick Affections, tho' the Juices are said to be viscid and concreted, yet the Use of Quicksilver has often been fatal; because as in these Diseases, the Salts in the Fluids are in greater Quantity and more Caustick, than in those of the Venereal kind, yet their Force and Energy is much weaken'd by the Lentor of the Fluids; but if, by the Use of Quicksilver, this Lentor is taken off, and the Juices made more fluid, the saline *Spicula* do then make very great Havock among the tender Membranes, by pricking and tearing them to pieces, whence follow those intolerable Pains, Hæmorrhages, Inflammations and Exulcerations, which arise from taking Mercury.

Quicksilver is said to be a great Enemy to the Nerves, being thought to bring on Weakness, Tremblings and Palsies; but these Symptoms are not to be attributed to Quicksilver so much as to the injudicious use of it; for by giving it in very small Doses, the coagulated Humours are unequally dissolved, so that the concreted Portions which still remain, being hurried along by the more fluid Parts, enter the smallest Canals of the Body, and there stick and form Obstructions; which gradually increasing, both in Strength and Number, the Tone of the solid Parts is weakneed and destroyed.

It has been often asked on what the salivating and antivenereal Virtue of Quicksilver depends. To explain this, some have without Ground had Recourse to Acids and Alcalies; for in the Cure of Venereal Diseases, this Medicine acts neither as an Acid, nor as an Alcali, since it produces the same Effects, whether it be mixed with acid Salts, or be conveyed into the Blood perfectly crude and unmixed, as by Friction and Fumigation. Neither is their Opinion probable, who say, that the Venereal *Virus* is an Acid, since the *Saliva* of those affected with this Disease discovers no Signs of Acidity, but on the

the contrary ſhews itſelf to be of an alcaline Nature by turning Syrup of Violets green, raiſing an Effervescence with acid Liquors, and by corroding Copper. We are not therefore to imagine, that Quickſilver acts like an Abſorbent or Alcali, by ſheathing the acid Parts of the *Virus*, for other Abſorbents would better anſwer that Intention. It is more probable, that all the Virtue aud Energy of Quickſilver depends on two Qualities, its great Diviſibility, and the ſpherical Figure of its Particles; by which it is enabled to penetrate the moſt inward Receſſes of the Body, inſinuate itſelf between all Parts of the Blood and *Serum*, and divide all Concretions found therein; not only by preventing their mutual Contact, but by increaſing their Fluidity, a ſmall ſolid Sphere being interpoſed between each two larger *Moleculæ* of the Juices. Again, as theſe *Moleculæ* ſtagnate at the Orifices of the very ſmall Veſſels, with the Globules of Mercury between them, they are there fully expoſed to the Force of the Solids, and of the circulating Fluids, and thereby divided and broke to pieces, ſo as to be capable of paſſing through the ſmalleſt Canals of the Body.

Now, when we conſider thoſe Emunctories of the Body, which are capable of tranſmitting a thick viſcid Lympha, we find them all reducible to the inteſtinal and ſalival Glands; for thoſe of the Kidneys and Skin give Paſſage only to the finer Parts of the Lympha, becauſe of the Smallneſs of the Veſſels, of which they are compoſed; and, hence it is, that ſudorifick Medicines have not a ſufficient Effect in Venereal Complaints, becauſe they drive through the Pores of the Skin only the thinner Parts, leaving the more thick and viſcid behind, which they cannot diſſolve; but the ſalival and inteſtinal Glands are capable of ſecreting theſe more concreted Parts. Therefore on taking Mercury, both or either of theſe Emunctoris tranſmit this viſcid Lympha, according as

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it is found in the Body in greater or ſmaller Quantities. This Excretion is made moſt commonly and moſt copiouſly by the ſalival Glands, becauſe they are moſt exquiſitely ſenſible. But when the Lympha to be evacuated is very acrid and capable of irritating and ſtimulating even the inteſtinal Glands to a ſufficient Degree, it paſſes off likewiſe by theſe; ſo that the Determination of this Lympha to both, or to either of theſe Emunctories, depends on its Acrimony; and for this Reaſon it is, that when the Irritation of the inteſtinal Glands is very much increaſed by a Cathartick Medicine, the Excretion is chiefly made that way, and the Salivation decreaſes or may be totally ſtopped.

Several Ointments and Plaiſters are made with Quickſilver, of which take the few following Inſtances:

Take of Quickſilver revivified from Cinnabar, two Ounces; Venice Turpentine, half an Ounce; grind them in a Mortar, till the Quickſilver is extinguiſhed; then add, by degrees, of freſh Lard, four Ounces; mix them well together for an Ointment in Venereal Caſes. Take of the Maſs for the Emplaſt. Diachyl. Simpl. twelve Ounces; melt and mix with it of Quickſilver killed by Turpentine, four Ounces, to make a Plaiſter; which being applied to the Parts above-mentioned, will raiſe a Salivation.

Beſides the Medical Uſes of Quickſilver, it is imployed in ſeveral Arts, ſuch as Gilding of Veſſels, Making of Looking-Glaſſes, *&c.* but the far greateſt Quantity of it is conſumed in purifying and refining Gold and Silver.

SECT.

SECT. VII.

METALS.

A Metal is a hard ſhining Mineral Body, fuſible by Fire, concreſcible by cold, ductile, and capable of amalgamating or being intimately united to Quickſilver. Metals are divided into baſe or imperfect, and noble or perfect. Imperfect Metals are thoſe which loſe, much by being expoſed to Fire, ſuch as Lead, Tin, Iron, Copper, and they are termed Baſe, or Ignoble, as being not much eſteemed. Perfect Metals are thoſe which undergo all Trials by Fire without any ſenſible Loſs, ſuch as Gold and Silver; and theſe are called Noble, as being highly eſteemed and greedily ſought after by every Body.

CHAP. I.

Of Imperfect Metals.

ART. I. *Lead.*

LEAD, named μόλιβδος in *Greek*, or *Plumbum* in *Latin*. *Plumbum Nigrum Plinii*. *Raphat Arab*. *Saturnus Chemicor*. is a ſoft, heavy Metal, of ſmall Value, of a livid Colour, ſtaining the Hands black, very little ſonorous, and melting by Fire, before Ignition. The *Greek* Authors often uſe the ſame

same Names indifferently to express Lead and Tin, and the *Latin* Interpreters have rendered the *Greek* Κασσιτερὸς both by *Plumbum* and *Stannum*. *Pliny*, however, says that Term means only what he calls *Plumbum Album*, which he makes to be different from *Stannum*; which, according to him, is a kind of *Plumbum Nigrum*, found in the same Veins with Silver. But either this Distinction of *Pliny* between *Plumbum Album* and *Stannum* is groundless, or the *Stannum* of the Antients was nothing but the purer and most shining Part of Lead, or a Mixture of the *Plumbum Album* and *Nigrum*, or of the *Plumbum Nigrum* and Silver. *Agricola* mentions three Kinds of *Plumbum*; one White, which we now call Tin; one of an Ash Colour, which is our Bismuth; and a third Black, which is our Lead.

Lead is seldom found pure in the Mines; but is got from different Veins or Oars, which consist in some Mines of a black, yellow, or ash-coloured Earth, sometimes full of Spangles; in others, of a red or white Rocky Stone, in which the shining Lead is seen in squarer Cheques; in others it is found mixed with white, yellow, or green Fluors. Lead Oar contains almost always some Quantity of Silver, and in some Parts of *England* from two thousand Weight, they extract ten, fifteen, or twenty, Pounds of Silver. There are many Lead Mines in *Spain*, *Italy*, and *Germany*; neither are they wanting in *France*, but it is difficult to extract the Metal from the Oar. The richest in *Europe* are in *England*, where the Oar is disposed *stratum super stratum* with Charcoal, which being set on Fire, the Metal runs out. Sometime instead of Charcoal they use Pieces of Wood, and sometimes they mix them together, according to the Degree of Fire which is required; for a Charcoal Fire is more intense than a Wood Fire. *Agricola* relates, that from the Lead Pyrites, which contain likewise some Quantity of Silver,

Silver, a white Metal flows firſt of all, ſuppoſed to be a great Enemy to Silver, becauſe it burns and deſtroys it; next to that comes the *Plumbum Nigrum* mixed wth Silver, which by Miners is called *Stannum*. This *Stannum* being expoſed to a ſtronger Fire, the Lead is turned into a kind of Litharge, or *Plumbago*, the pure Silver remaining behind; and that Litharge, or *Plumbago*, being afterwards melted with Charcoal, the pure Lead preſently ſeparates, and runs down.

The ſpecifick Gravity of Lead to that of Gold is, as Three to Five. This Metal is eaſily burnt and reduced to an aſh-coloured Calx, which by a ſtronger Degree of Fire turns Yellow, and then Red, being in that State termed Minium. By ſtill increaſing the Fire, this Subſtance melts into an Oily Fluid, which being expoſed to the cold Air, concretes into a reddiſh or yellowiſh Maſs conſiſting of ſeveral thin pellucid *Laminæ*, ſoft to the Touch, though compact, which is termed Litharge. But if, when melted, an intenſe Degree of Heat be ſtill continued, it wholly goes off in Fumes. If the Calx of Lead, Minium, or Litharge, be melted by throwing in burning Charcoal, or any other combuſtible Matter, they preſently return to Lead. If Lead and Nitre are melted together in a Crucible, they flaſh a little, and if the Powder of Lead be thrown into the Flame of a Candle, it takes Fire, and turns the Flame blue. Hence it is evident that the ſulphureous inflammable Principle is in Lead, though in a very ſmall Quantity; and alſo that this Principle is not intimately united to the other Principles of which this Metal conſiſts, ſince a very ſmall Degree of Fire is able to ſeparate them. Lead expoſed on a Tile to the Focus of a great Burning Glaſs preſently emits copious Fumes; then by degrees is turned to Aſhes, or to an aſh-coloured Calx, which almoſt in an Inſtant turns Yellow and Red, and then melts into a ſaffron-coloured very fluid Liquor,

which afterwards ſoon vaniſhes in Smoak. But if, before this Evaporation, it be removed from the Focus, it hardens into a red or yellowiſh Maſs, like Orpiment, conſiſting of thin *Laminæ*, pellucid like Talc. If this Talcous Glaſs of Lead be again expoſed to the Burning Glaſs on a Peice of Charcoal, it preſently melts and recovers the Form of Lead; but if a bit of pure Lead be put in the Focus in the ſame Manner on Charcoal, it melts, and at length is wholly diſſipated in Smoak, no Glaſs remaining.

The Fumes thus ariſing from Lead, are properly the Flowers of the Metal, or the Aſhes deprived of the ſulphureous Principle; for if they be collected, and melted on Charcoal, they are preſently reduced again to Lead, by Means of the Sulphur communicated to them from the Charcoal. From all which it is evident, that Lead is compoſed of a vitrifiable Earth, of the Talcous or Foliaceous Kind, and of a ſulphureous Principle, which muſt be contained in all combuſtible Bodies; and this inflammable Principle is not in any great Quantity, nor intimately united to the Earth.

Lead diſſolves all other Metals except Gold and Silver, and carries them along with it, either in Fumes, or being turned with them into Litharge. Hence it is often uſed in refining Gold and Silver by the Cupel. It never contracts Ruſt by Moiſture, like Iron and Copper, but is corroded by Acids, and diſſolved by Vinegar, Spirit of Vitriol, and Spirit of Nitre, and the Salt remaining after the Evaporation of theſe Solutions has a ſweet Taſte. It is likewiſe capable of being diſſolved by all oily and fat Subſtances. While it is turned into a Calx, though it emits copious Fumes, and conſequently loſes a conſiderable Part of its Subſtance, yet it increaſes in Weight, ſo that an Hundred Pounds of Lead turned to Minium weigh Ten Pounds more than before; but if that Minium be again reduced to Lead,

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it will not weigh near an Hundred Pounds. Minium, melted with Sand, turns to a yellow Glaſs, like Amber.

From the excellent Virtues of this Metal, *Paracelſus* called it the *Fourth Pillar of Phyſick*. In itſelf, or without Preparation, it is cooling, incraſſating, repellent, abſorbent, and lenient. It is believed to be an Enemy to Venery, and undoubtedly calms Effervescences in the Blood, and checks the Progreſs of Inflammations, but is every way deſtructive to the Nerves. Taken inwardly, it loads the Stomach, gripes, and ſtops the Excretion both of the Fæces and Urine. It brings on Spaſms and Tremblings, Difficulty of Breathing, and Suffocations; which direful Effects many have felt by drinking Wine recovered by Litharge after it has grown ſowre. Hence it is reaſonable to conclude, that Lead, and all Preparations from it, are much more proper to be uſed outwardly than inwardly.

Among theſe Preparations, we reckon, in the firſt place, thoſe called Recrements, ſuch as *Calx*, or Aſhes, *Minium*, *Litharge*, *Plumbum Uſtum*, and *Ceruſs*; and ſecondly, ſuch Chemical Preparations as are uſed in Phyſick; ſuch as the Vinegar of Lead, the Salt or Sugar of Lead, the Balſam of Lead, and its Burning Spirit.

The *Calx*, or Aſhes of Lead, and *Minium*, are thus prepared:

The Lead is melted over a Charcoal Fire, in a clean unglazed Earthen Platter; and the Fire continued till the melted Metal turns to a blackiſh or aſh-coloured Powder, which is then called the Calx, *or Aſhes of Lead. By continuing the Fire a little longer, this Powder becomes yellow, called by the* French *Painters* Maſſicot; *and if cal-*

cined in a Reverberatory Furnace, it becomes very red, being then called Minium *in the Shops.*

Theſe Preparations of Lead blunt the Acrimony of the Humours, check Inflammations, and deterge foul Ulcers, diſpoſing them to cicatriſe. *Minium* is uſed in the *Unguentum Rubrum ſive de Minio*, in the *Emplaſtrum pro Fracturis*, *Emplaſtrum Stypticum*, and *Emplaſtrum Matricale* of *Charas*. I have already obſerved that the *Minium* of the Antients was different from that of our Shops, the firſt being native Cinnabar, the other Lead calcined by a very ſtrong Fire.

Litharge, *Lithargyrus ſive Spuma Argenti Officin.* was of two Kinds among the *Greeks*, differing only in Colour. One was Yellow, called *Chryſitis*, or *Lithargyrus Auri*; the other White, called *Argyritis*, or *Lithargyrus Argenti*; and the ſame Diſtinction is ſtill kept up. It is commonly made in thoſe Furnaces in which Lead is ſeparated from Silver, or where Silver is refined by Lead from the other Metals mixed with it.

When the Workmen deſign to ſeparate Silver from the Lead or Copper contained in the ſame Oar with it, they *Firſt make a kind of Trough of Bone-Aſhes, in which they melt a great Quantity of Lead; and into this melted Lead they throw the Silver Oar to be purified, and continue to blow with Bellows till all the Lead, mixed with the Copper, or Lead, contained in the Silver, ſwims on the melting pure Silver, like Oil. Then they gradually blow this Lead toward the Sides of the Trough, and afterwards cutting theſe Sides, the Vitrified Lead runs down to the Ground, and there becomes Litharge, ſometimes of a Gold, ſometimes of a Silver Colour; whence the Dealers in theſe Commodities*

Commodities have given out that the one was made from Silver, the other from Gold; whereas the Difference conſiſts only in having been more or leſs expoſed to the Fire, or in having a greater or leſs Mixture of Copper.

Litharge therefore is nothing but vitrified Lead, either alone, or mixed with Copper; it is frequently uſed in Phyſick in outward Appplications, being mixed with oily Subſtances to make the Baſis of moſt Plaiſters, by reaſon of the Emplaſtick Conſiſtence, which this and other Recrements of Lead acquire by being mixed and diſſolved by Oils. It is of a drying, detergent, and gently aſtringent Quality; and for this Reaſon is uſed in incarning and cicatriſing Ulcers. It is prepared by being well levigated in a Mortar with clear Water, till all the Lead which is not perfectly calcined, or other Metallick Fæces, fall to the Bottom, leaving the finer Parts incorporated with the Water; which ſubſiding by Reſt, are ſeparated from the Water and dried. This pure Litharge is uſed in the *Unguentum Nutritum*, *Deſiccativum*, *Rubrum* and *Apoſtolorum*; in the *Emplaſtrum Palmeum*, *Diachylon Simplex & Compoſitum*, *Polychreſtum*, *&c.* of *Charas*, and in Plaiſters and Ointments of many other Diſpenſatories.

Plumbum Uſtum, Burnt Lead, is a heavy blackiſh Powder, made by laying thin leaden Plates, and powdered Sulphur, *ſtratum ſuper ſtratum*, in a glaſs Veſſel, and then calcining them by the Force of Fire, they being continually ſtirred during the Calcination, till they are reduced to a very fine Powder, which is afterward to be waſhed ſeveral Times in clear Water, and dried for Uſe. This Medicine is uſed to cleanſe foul inveterate Ulcers, and to diſpoſe them to cicatriſe. It is an Ingredient in the *Unguentum Diapompholygos*.

The *Ceruſs* of the Shops is a kind of white Ruſt of Lead, made after this Manner:

Some very ſharp Vinegar being in the Summer Time put into a wide mouthed Earthen Veſſel, it is afterwards cloſely covered by a Plate of Lead; and in Ten Days, or thereabouts, the Plate will be diſſolved, a thick Sediment remaining at the Bottom of the Veſſel, which being collected and dried, and afterwards ground, is made into a Maſs, and kept for Uſe.

Ceruſs may likewiſe be made by *Steeping Filings of Lead in Vinegar for about ten Days; or even by infuſing leaden Plates, which muſt every now and then be ſcraped, then infuſed again, till they are quite corroded. All the Scrapings being collected are ground, and then made into a Maſs with Vinegar.*

Before Ceruſs is uſed for Plaiſters, Ointments, Eye-Waters, *&c.* it ought to be well prepared, and waſhed, and care ought to be taken that it be not adulterated with Chalk. It is more cooling, drying, and aſtringent than the other Preparations of Lead, and is uſed to good Purpoſe in Inflammations and Ulcers. It is an Ingredient in the *Trochiſci Albi Rhaſis*, in the *Unguentum Album* or *De Ceruſſa*, the *Unguentum Pompholygos*, and *Deſiccativum Rubrum* of *Charas*, and in his *Emplaſtrum Polychreſtum*, and *Emplaſtrum Nigrum*.

The Firſt Preparation of Lead is the *Acetum Saturni*, for making which,

Take any Quantity of well ground Ceruſs, and pour upon it, in a Glaſs Veſſel, as much diſtilled Vinegar as will ſtand the Height of four Fingers Breadth above

above it. Digeſt them in a gentle Heat, ſhaking the Glaſs frequently, till the Vinegar turns ſweet; then pour off the Liquor, and digeſt the Ceruſs once more with the ſame Quantity of freſh diſtilled Vinegar, in the ſame Manner as before. Filtre the Solutions through Cap Paper, and ſo keep them for Uſe. This Vinegar, mixed with Oil of Roſes, or any other Oil, and long ſtirred in a Mortar, becomes the Linimentum Nutritum, *or* Butter of Lead. *It is proper for Itchings in the Skin, Tetters, or Ring-Worms, the affected Part being rubbed with it.*

The *Salt*, or *Sugar of Lead*, is made by *Evaporating the Vinegar to a Pellicle over a ſlow Fire, and then ſetting the remaining Liquor in a cool Cellar to cryſtallize; when all the Cryſtals are collected into one Maſs, the remaining Liquor being poured off, this Saccharine Maſs is dried in the Shade.*

Though this Sugar of Lead is by ſome recommended to be taken inwardly, in Diſeaſes of the Lungs, Spitting of Blood, Dyſenteries, *&c.* yet, for the Reaſons already given, it is much ſafer to confine it to Outward Applications. It is much uſed by Chirurgeons in Inflammations, Diſeaſes of the Eyes, Eryſipelas, *&c.* It blunts the Acrimony of the Humours, deterges Ulcers, and then dries and cicatriſes them. It is mixed in Waters, Ointments, and Plaiſters. In a Gonorrhæa, accompanied with a violent Scalding, *Saccharum Saturni*, mixed either with Roſe Water or warm Milk, may be injected with good Succeſs.

The *Balſam of Lead* is made of *One Part of the Sugar, and two Parts of Oil of Turpentine, which being well mixed are digeſted in a Sand*

Heat, till the Oil turns very Red. This Preparation is uſed for ſtubborn Ulcers, to correct ſharp Humours, and Prevent Putrefaction.

The *Burning Spirit* and *Oil of Lead*, are obtained from the Sugar or Salt by Diſtillation, but the Virtues of theſe inflammable Subſtances are the ſame with thoſe of Spirit of Wine, whatever Chemiſts may pretend to the contrary; for the Spirit is only the Spirit of Wine concentrated in the Vinegar diſengaged by this Preparation, and the red Oil is likewiſe extracted from the Vinegar.

The *Mineral Mummy of Lead* of *Poterius*, is the Calx of Lead and Quickſilver amalgamated together, made in this Manner:

Take of Mercury revivified from Cinnabar two Parts, and one Part of Lead. Amalgamate them together, and continue to ſhake them ſtrongly in an Earthen Veſſel over a Charcoal Fire, till the whole is reduced to a black Powder. Bake this Powder in a Sand Heat, in a Glaſs Matraſs, till it turns yellow, and keep it for Uſe.

This *Mummy* cures, in a very ſmall Time, the Itch, Tetters, and other Diſeaſes of the Skin, cleanſes callous Ulcers, and diſſolves the Callus, and diſſipates Swellings in the Glands of the Breaſts, being mixed in any Ointment or Plaiſter. It is likewiſe of ſervice in Cancers, which are not arrived at their laſt Stage. It muſt, however, be cautiouſly and ſparingly uſed, leſt the Suppuration prove too great. But if a *Carcinoma*, for Inſtance, be not ulcerated, a Drachm of this Mummy, accurately mixed with an Ounce of *Emplaſtrum Magneticum* of *Angelus Sala*, and applied to the Tumor, will gradually diſſolve it. But if there be an Ulceration, then a ſmall Pencil of Lint

Lint dipped either in the Mummy alone, or mixed with Powder of Myrrh, is to be thruſt into the Ulcer, the *Emplaſtrum Magneticum* being applied upon it. By this Means the hard Tumor gradually reſolves by a gentle Suppuration, and by proper Internal Remedies uſed at the ſame time, the *Carcinoma* is healed.

Art. II. *Tin.*

THE Word *Stannum* has been applied to ſeveral Subſtances, mentioned in the foregoing Article; but what we now call by that Name ſeems to me to be the ſame with the κασσιτερὸς of the *Greeks*, or the *Plumbum Candidum* of *Pliny*. It is one of the ſofter, and more ignoble Metals, white, ſhining, ſomething livid, brittle, and ſonorous, eſpecially when united to other Subſtances. Tin is found in ſeveral Countries, but the richeſt Mines are in the Counties of *Cornwal* and *Devonſhire*, in *England*.

It is commonly got from a Stony Subſtance, ſometimes black, ſometimes yellow, and ſometimes white. Theſe Stones are in ſome Oars friable, in others ſo hard that they muſt be broke to Pieces by Fire. In *Cornwal*, the Oar being firſt ſeparated from the uſeleſs barren Stones is beaten to Pieces with Iron Hammers, a Stream of Water running continually through it during the Operation, by which all the Earthy Parts are waſhed away, the Metal falling to the Bottom. Theſe Metalline Parts are afterwards ground by a Mill Stone, and then well waſhed with Water, to ſeparate all Remains of Earthy Parts. Then, being well dried, they are thrown into a Furnace, and mixed with Charcoal, and melted by a ſtrong Fire, kept up by continual blowing of Bellows. The melted Tin falls to the Bottom of the Furnace, and from thence runs out by an Opening made on Purpoſe into Moulds made of Sand, where

it

it hardens into large Maſſes. The upper Parts of theſe Maſſes are ſo ſoft and ſo eaſily melted, that they cannot be worked without the Addition of about three Pounds of Copper and eighteen Pounds of Lead to an Hundred Weight of Tin. Various Subſtances are found mixed with Tin Oar; one of the Arſenical Kind, called *Mundic*, is of a ſhining dark Colour, dyes the Hands black, and when expoſed to the Fire, flies away in Smoak. Another is ſoft, and of a ſaponaceous Nature, readily ſoluble in Water, but after being thus diſſolved it grows very hard, being a kind of Marle, which is often found to contain Stones, ſometimes pellucid like Cryſtal, ſometimes red.

Tin is the lighteſt of all Metals, its ſpecifick Gravity being to that of Gold only as Three to Eight. It is eaſily melted, and turns very ſoon to a whitiſh Calx. Being laid on a Tile in the Focus of a great Burning Glaſs, it emits a thick, roapy Fume, in great Quantities; leaving a rare white fine Calx behind, which being continued longer in the Focus turns to ſmall Cryſtals, or thin pellucid Filaments. This cannot be melted any more, without the Addition of ſome other Subſtance, ſuch as Charcoal, *&c.* by which it is preſently converted again into Tin. Filings of Tin thrown into the Flame of a Candle, will take Fire, make the Flame of the Candle blue, emit Smoak, and ſmell like Sulphur mixed with Garlick. Hence it is evident, that Tin conſiſts of a Cryſtalline or Vitrifiable Earth, which alone is hardly fuſible, and of a ſulphureous Principle, mixed perhaps with ſome Quantity of an Arſenical Salt.

Tin is more eaſily melted than any other Metal, and eaſily adheres to them all; and on this Account is laid on Copper Veſſels and Iron Plates, to preſerve them from Ruſt. It likewiſe penetrates other Metals, hardens them, and makes them brittle; and it requiresa great deal of Pains to ſeparate it, when

once mixed with them, whence it has been called by Chemiſts *Metallorum Diabolus*. It is ſoluble only in *Aqua Regia*, and a Solution of it tinges a Solution of Gold with a beautiful Purple Colour. A Liquor which will perpetually ſmoak, or, as is commonly ſaid, a Spirit fermenting with the Air, may be made from Tin in this Manner:

Take of pure Tin, one Part; of Quickſilver, three Parts: Mix them, and make an Amalgama, to which add four Parts of Corroſive Sublimate, and having mixed them well together, in as ſmall a Time as can be, throw them into a Glaſs Retort, to the Neck of which a Receiver is to be fitted, and a Diſh ſet under the Receiver full of cold Water. Then diſtilling with a Sand Heat, a pellucid Liquor riſes firſt, next the Spirit with great Impetuoſity, and laſt of all, White Flowers ſtick in the Neck and upper Part of the Retort. Then removing the Fire, ſeparate the turbid Liquor, and keep it cloſe ſtopped in Glaſs Phials; and whenever it is expoſed to the open Air, it will break out in thick Fumes.

Tin is ſeldom uſed inwardly, though its Virtues are highly celebrated by ſome Authors in Diſeaſes of the Lungs and Uterus; the Filings being taken in the Quantity of a Scruple or more, every Day for ſome Time.

The Principal Chemical Preparations of Tin are, the *Sal Jovis*, *Antihecticum Poterii* or *Diaphoreticum Joviale*, and *Aurum Moſaicum*.

Sal Jovis, or the Salt of Tin, is prepared from the Calx of this Metal, expoſed for two or three Hours to a Reverberatory Heat, with the ſtrongeſt diſtilled Vinegar, much in the ſame manner as the *Saccharum Saturni*. It is recommended in Suffo-

cations

cations of the Uterus, and other hyſterical Affections, from two to ſix Grains, frequently repeated.

The *Antihecticum Poterii* is thus made:

Take equal Parts of the beſt Martial Regulus of Antimony, and of the pureſt Tin; melt them together in a Crucible, and then throw them into a Braſs Cone, well greaſed and warmed; ſeparate the Scoriæ, *if there be any, and under theſe will be found a* Regulus Jovialis. *Powder and mix well one Part of this Regulus with three Parts of pure Nitre, and throw this Powder by Spoonfulls, into an ignited Crucible, and calcine them together. Then let the Maſs in Powder be thrown into a Veſſel of warm Water, and edulcorated by frequent Waſhings, and afterwards dried. It will remain a white Powder, with a bluiſh Caſt; the Doſe of which is from half a Scruple to a Drachm, in hectick Fevers, Conſumptions, Spitting of Blood, and in every ſaline Diſpoſition of the Blood.*

For the *Aurum Moſaicum, Take of pure Tin, an Ounce; of Mercury, revivified from Cinnabar, ten Drachms; make an Amalgama, which being mixed with ten Drachms of common Sulphur and an Ounce of Sal Ammoniac, let the whole be very well rubbed and mixed together, then ſublime them with a ſtrong Fire for four Hours; a kind of Cinnabarine Subſtance will riſe to the upper Part of the Veſſels, a ſpungy Subſtance, of a Gold Colour, remaining at Bottom, which being waſhed in many Waters, is termed* Aurum Moſaicum, *and uſed both by Painters and Phyſicians. It is believed to be Diaphoretick, and is given from ten to thirty Grains, in hyſterick and hypochondriacal Affections, and in Malignant Fevers.*

Art III. *Iron.*

Common Iron, called σίδηρος in *Greek*, *Ferrum* in *Latin*, and *Mars* by the Chemiſts, is an ignoble, very hard and ſonorous Metal, which, when poliſh'd, is of a ſhining Colour, between white and livid; but when unpoliſh'd, of a black Colour. Iron is of two Kinds, common and purified. This laſt is termed *Acies*, *Chalybs*, or Steel. No Metal is ſo neceſſary for the Uſes of Life as Iron, nor is any Metal found in ſo great Quantities, almoſt in every Country. There are many Iron Mines in *France*; but the *German* Iron and Steel is preferred to the *French*. It is dug out of the Earth in very different Forms. In ſome Mines, it is found pure, either granulated, or in Lumps; in others, it is met with in a heavy Stone, of a dark, yellow, or reddiſh Colour; or in a heavy yellowiſh or red Sand. Some Oars yield the pure Metal contain'd in them with little Trouble, requiring only to be broken into ſmall Pieces, and ſo to be melted with Charcoal in the ſpace of a few Hours. Other Oars require a great deal of Labour to melt them; and alſo the Addition of Quicklime, Marle or Stones, to facilitate the Fuſion. The melted Metal is run into large Molds, and there hardens into long thick Maſſes. Theſe Maſſes are melted a ſecond time, the flowing Metal being continually ſtirred with an Iron Rod; and when hardened, it is beat with great Hammers, till all the heterogeneous, vitrified, or burnt Parts are ſeparated. Iron thus prepared may be forged into any Shape, by being firſt ignited, and then beat on the Anvil by Hammers. All Iron is not however of the ſame Goodneſs; the tougheſt is the beſt, and that which is moſt brittle of the leaſt Value. This Difference does not proceed from the Metal

Metal it ſelf, but from the Mixture of earthy and vitrolick Parts.

Steel is made of Iron by frequent Fuſion and Purification; and in the Iron of ſome Mines this Converſion is very eaſily obtained; in others, more difficultly; and accordingly the Ways of performing it are different. If the Iron be very good, it is melted in Furnaces, and to the melted Metal are added gradually equal Parts of Salt of Tartar, or any other alcaline Salt, Filings of Lead, and Shavings of Bullocks Horns, the Metal being kept continually ſtirred. Afterwards the hardened Maſs is beat into ſmall Bars on an Anvil. But if the Iron cannot be thus melted, they take Bars of about an Inch Diameter, or leſs, and lay them *ſtratum ſuper ſtratum* in a proper earthen Veſſel, with a Mixture of equal Parts of Soot, Charcoal Duſt, and Filings of Bullocks or Cows Horns, or Hairs. When the Veſſel is full, it is covered and coated with a proper Lute, and ſet in a reverberatory Furnace. The Fire is gradually increaſed, till the Veſſel is red hot, and continues ſo for ſeven or eight Hours. Then the Fire being ſuffered to go out of itſelf, the Iron Rods are taken out changed into Steel. This is known by breaking them; for if the ſhining metalline Sparks are very ſmall and very cloſe together, through the whole Thickneſs of the Bar, the Steel is very good; but if they are at greater Diſtances from each other, and have viſible Pores between them, the Steel is of leſs Value. Sometimes theſe Sparks are very cloſe together near the Surface of the Bar, but more diſtant toward the Center, which is a Sign, that the Calcination was imperfectly made; and in that Caſe, the Stratification and Calcination is to be repeated, till the Change is thoroughly made.

Iron is the hardeſt of all Metals, and Steel is ſtill harder and more rigid than Iron; if, being ignited, it be thrown into cold Water. Its ſpecifick Gravity

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is to that of Gold nearly as three to ſeven. Iron long ſteeped in Water communicates to it a ferrugineous Taſte, being diſſolved by the Water and turned to a yellowiſh Ruſt. This Solution may be brought about in a little time, if the Iron be ſucceſſively wetted with Water, and then dried for ſeveral times; but if ſuffered to remain in the Water without being ever dried, it is a long time before it is corroded. This makes it ſo difficult to preſerve Iron from Ruſt; for which the beſt way is to rub it over with ſome oily Subſtance. Filings of Iron, laid in a Heap and ſprinkled with Water, will grow ſo hot as to ſet Fire to Sulphur, if the Heap be large. By calcining Iron long in a reverberatory Furnace, it is reduced to a Calx, of a dark red, or purpliſh Colour. When ignited in a ſtrong Fire, till it be near melting, and then beat by the Hammer, it throws off Scales, which are nothing but half vitrified Iron. When it is melted in the refining Furnaces, a Part of it mixed with the Charcoal, or other earthy Parts, runs into *Scoriæ*, which are a kind of Glaſs. This Metal is diſſolved by all Acids, but left untouch'd by alcaline Salts. Filings of Iron thrown upon any Flame take Fire, and emit green or red Sparks. Theſe Filings mixed with an equal Portion of Nitre preſently make an Ebullition, and emit copious Fumes of a fœtid Smell, then flaſh and deflagrate. If the Filings are put into Spirit of Sea Salt, or of Vitriol, a violent Effervеſcence and Fumes are raiſed. The Fumes are intirely ſulphureous, and if a lighted Candle be held to them, they flame immediately; fulminating and often breaking the Veſſels. Iron expoſed to the Focus of a great Burning Glaſs on a Tyle preſently melts, emits Fumes, and then becomes a brittle half vitrified Subſtance. But if laid on a Piece of Charcoal in the ſame Focus, it preſently melts, as before, and then flies wholly off in Sparks. If the half vitrified

Subſtance

Subſtance juſt mentioned be expoſed on a Piece of Charcoal, it preſently recovers the Form of a Metal, that is, the ſhining Colour and Ductility, and afterwards is wholly diſſipated in Sparks. From theſe Experiments it is evident, that Iron conſiſts of a large Proportion of a bituminous Subſtance, which being united with a vitriolick Salt is involved in ſo large a Quantity of Vitrifiable Earth, as difficultly to deflagrate with Nitre. That the vitriolick Salt is likewiſe in a conſiderable Quantity, is evident from the Solubility of Iron in Simple Water, from the Taſte of the Water in which Iron has been diſſolved, and from the Heat conceived by Filings of Iron ſprinkled with Water, which ariſes from the Action of theſe Salts on the Metallick Earth. There is however ſome Difference between the Sulphur contained in Charcoal, and that contained in Iron; ſince Iron reſtored by the Mixture of Charcoal-Sulphur, and expoſed to the Rays of the Sun in the Focus of a Burning Glaſs, flies off entirely in Sparks. Iron therefore conſiſts of a bituminous inflammable Principle, a vitriolick Salt, and a vitriolick vitrifiable Earth. This Earth united with any inflammable Subſtance by Fire will become Iron, which accordingly happens in burning any inflammable Bodies, in the Aſhes of which Iron diſcovers itſelf to the Magnet, though before no Signs of Iron are diſcoverable in theſe Subſtances, even when reduced to the fineſt Powder.

Iron is the moſt uſeful of all Metals for Human Life; for beſides the innumerable Kinds of Inſtruments made of it, it furniſhes excellent Remedies in many Diſeaſes. The Medicinal Virtues of Iron taken inwardly were not unknown to the Antients. *Diaſcorides* attributes to it an aſtringent Virtue, and recommends it in uterine Hæmorrhages. He likewiſe orders Wine or Water, in which a red-hot Iron has been quenched, in the Cæliac Paſſion, Lientery,

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and Dyſentery, and for reſtoring weak Stomachs. Phyſicians do now acknowledge a two-fold Virtue in Iron, one Aperient, the other Aſtringent; for it is obſerved to cure a Suppreſſion of the Menſes, to open Obſtructions of the Liver, Spleen, and other Viſcera, to ſtop Hæmorrhages and Diarrhæas, and to ſtrengthen the relaxed Fibres of the Inteſtines. On theſe Accounts it is reckoned the Grand Specifick in Hypochondriacal Affections, and all kinds of Chloroſes. Some attribute an Aperient Virtue to ſome Preparations of Iron, and an Aſtringent Virtue to others; but the Truth is, all theſe Preparations are both Aſtringent and Aperient, though not in the ſame Degree.

For Medical Uſes, Iron is preferable to Steel, and the Filings of Iron reduced to an Alcohol, or impalpable Powder, is preferred by many to all other Preparations in promoting the Flux of the Menſes, and in removing Obſtructions of the Viſcera, being given from twelve Grains to half a Drachm, once or twice a Day, in Pills, Lozenges, or Boles.

Take of Filings of Iron, finely powdered, and paſſed through the Searce, half an Ounce; of powdered Cinnamon, half a Drachm; of the Mucilage of Gum Tragacanth, a ſufficient Quantity to make Pills. The Doſe of theſe Pills is a Scruple, to be taken in the Morning on an empty Stomach, and repeated four Hours after Dinner, drinking afterwards a Glaſs of Wine and Water.

Take of finely powdered Filings of Iron, an Ounce; of Cinnamon, a Drachm; of Cloves a Scruple; of white Sugar diſſolved in any pleaſant Simple Water, and then boiled to the Conſiſtence of a ſolid Electuary, four Ounces; Mix them together, and make Lozenges, the Doſe of which is two Drachms Morning and Evening.

Take of fine Filings of Iron, two Drachms; of the Powder of dried Arum Roots, three Drachms; Crystals of Tartar, two Drachms; Gum Ammoniac, Myrrh, Cinnamon, and Nutmeg, of each a Dram; Powder of Saffron, half a Drachm; Syrup of Wormwood, a sufficient Quantity, to make an Opiate or soft Electuary. The Dose of which is two Drachms, to be taken Morning and Evening in a Chlorosis.

Filings of Iron tied up in a Linnen Bag are likewise prescribed to be infused in aperient Apozems and alterative Broths; and Steel Wines are made with them in this manner:

Take of pure Filings of Iron, an Ounce; of any strong Wine, a Pint. Digest them in a warm Place for twelve Hours, shaking the Vessel every now and then. The Dose is four Ounces, to be taken twice a Day alone, or it may be mixed in Apozems and Ptisanes, in the Quantity of a Spoonful in each Draught.

Of the Filings of Iron and Tartar are made Steel Waters in the manner already mentioned in the Chapter of Mineral Waters.

The medical Preparations of Iron are reckoned either Aperient or Astringent. Of the first kind are the *Crocus Martis Aperiens*, the Salt or Vitriol of Iron, *Riverius*'s Salt of Iron, soluble Tartar of Iron, the aperient Tincture of Iron, and the *Flores Martiales*. Of the second kind, are the *Crocus Martis Astringens*, and the astringent or antiphthisical Tincture of Iron.

The *Crocus Martis Aperiens* is the most simple and most excellent Rust of Iron, made by exposing Filings of Iron to the open Air in the Spring, till it be wholly turned to Rust by the Dews and Rains. This Rust reduced to a very fine Powder, is kept

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for use. The Dose is from ten Grains to two Scruples. Others prepare this *Crocus* with Sulphur in the following manner:

Take of Filings of Iron and powdered Sulphur, equal Parts; mix 'em together, and moisten them with Water, and make them into a soft Paste, which is to be laid on a Tyle, in a warm Place, for four or five Hours, to ferment. The Paste thus disposed, first begins to be hot, then gradually swells, cracks in several Places, emits Fumes, dries and calcines of itself. Then the Tyle, or earthen Dish, is set upon live Coals, the Mass being continually stirred with an Iron Rod, till all the Sulphur is burnt away. The remaining Powder is of a purple Colour, called, Crocus Martis Aperiens cum Sulphure paratus. *The Dose is from fifteen Grains to a Drachm.*

The *Salt* or *Vitriol of Iron* is thus made:

Take of pure Filings of Iron, three Ounces; of Oil of Vitriol, four Ounces; and of clear Spring Water, ten Ounces. Digest them together, till the Iron is perfectly dissolved; then let the Liquor being separated by Inclination from the Fæces be evaporated to a Pellicle, and set in a cool Place to crystallize. The Crystals are of a green Colour; and these being taken out, the remaining Liquor is to be evaporated and crystallized a-fresh; and all the Crystals being first well dried are to be kept for Use. The Dose is from two Grains to a Scrupel, in a proper Vehicle. If given in too large a Dose, this Salt excites Vomiting. It is recommended not only as serviceable to open Obstructions, but to kill Worms.

Riverius's Salt of Iron is made, *By digesting in an Iron Pot, set either in the Sun, or in some*

other warm Place, equal Parts of Spirit of Wine and of Oil of Vitriol. After standing for several Days, a saline Concretion is obtained, which is to be well dried, and kept for Use. The Dose is from half a Scruple to a Scruple. It opens Obstructions, strengthens the Viscera; *and* Riverius *recommends the long-continued Use of it in hypochondriacal Affections, Chloroses, and Obstructions of the Liver and Spleen.*

The *Tinctura Martis Aperiens* is thus prepared:

Take of rusty Filings of Iron, twelve Ounces; *white Tartar, two Pounds*; *boil them in an Iron Pot with a sufficient Quantity of Rain Water, for twelve or fifteen Hours, stirring them sometimes with an Iron Spatula. Then strain off the Liquor, and evaporate it to the Consistence of a Syrup. This Tincture or Extract, as it may be called, is prescribed with Advantage in a Suppression of the Menses, Green Sickness, Dropsy, and other Diseases arising from Obstructions. The Dose is from one Drachm to two or more in alterative Broths, or any other convenient Liquor.*

Tartarum Chalybeatum Solubile is made, *By dissolving a in Pint of the Tincture last mentioned four Ounces of Soluble Tartar*; *and then evaporating the Solution to Dryness. The Powder that remains is of a saline Nature and dark Colour, and must be carefully preserved from Moisture. The Dose is from ten Grains to a Drachm, in a proper Vehicle.*

The Flowers of Iron called likewise *Mars Diaphoreticus*, or *Flores salis Ammoniaci Martiales* are thus prepared:

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Take of Ruſt of Iron, twelve Ounces; of powdered Sal Ammoniac, eight Ounces; mix them well; then ſublime them in an earthen Cucurbit, with a Glaſs Head, in an open Fire. Yellow ſaline Flowers will ariſe, the Doſe of which is from two to twenty Grains. They are powerfully attenuating and aperient, ſudorifick, diuretick, and a little cathartick; and if given in a large Doſe they excite a Nauſea. They are ſucceſsfully preſcribed in ſtubborn Fevers, in an Aſthma, in hypochondriacal and other chronical Diſeaſes.

The *Crocus Martis Aſtringens* is made, *By firſt turning Filings of Iron to Ruſt, by ſprinkling them a ſufficient Number of times with Vinegar; then by calcining this Ruſt in a reverberatory Heat, till it turns to a very red Powder. It is given ſucceſsfully in Diarrhæas, Dyſenteries and Hæmorrhages of all Kinds. The Doſe is from fifteen Grains to a Drachm, in form of a Bolus, Lozenges or Pills.*

The *Aſtringent Tincture of Iron*, or *Tinctura Antiphthiſica*, is thus prepared:

Take of the Vitriol of Iron, an Ounce; Terra foliata Tartari, *two Drachms*; *powder them ſeparately, then mix them by degrees in a Glaſs Mortar, rubbing them conſtantly during the Mixture, till they turn to a kind of ſoft Paſte, of a red Colour. Then pour upon them gently four Ounces of rectified Spirit of Wine, which will preſently acquire a red Colour, and is then to be poured off by Inclination from the Fæces. The Doſe is from ten to thirty or forty Drops.*

It ſtops Hæmorrhages, Gonorrhæas, and the Fluor Albus in Women. It cleanſes and dries Ul-

cers in the Lungs, and is often preſcribed with Advantage in Conſumptions, mixed with equal Parts of Balſam of Capivi. In this Preparation, I have rejected the *Sac. Saturni* commonly uſed, and have ſubſtituted in its place the *Terra foliata Tartari*, which extracts the Tincture full as well, and is free from all the Inconveniences which attend the inward Uſe of Preparations of Lead.

Having thus given a ſufficient Account of the medical Preparations of Iron, it will be proper to ſay ſomething concerning the Virtues of this Metal, and the Cautions to be obſerved in the Uſe of all the Medicines prepared from it. We have already obſerved, that Phyſicians have aſcribed two kinds of Effects to Iron, one Aperient, the other Aſtringent. Hence Chemiſts have tortured it various ways into *Croci*, *Tinctures*, *Salts*, &c. by which the aperient or aſtringent Qualities might be extracted; but it is worth Obſervation, that the aſtringent Preparations are often found to prove cathartick and diuretick; that the Aperent often ſtop Fluxes; and the Preparations of both kinds promote the Flux of the Menſes, and ſuppreſs them when immoderate. If we inquire into the Cauſe of theſe various Phænomena, it will be found to be intirely in the Styptiſity of Iron; which, according to the different Diſpoſitions of the Body of the Patient produces different and even contrary Effects. Therefore though Iron may often act as an Aperient; yet even then it acts only by its Adſtriction. To conceive this, we are to conſider, that the morbid State of the Blood is of three kinds. The firſt is the glutinous State, in which the Blood deprived in a great Meaſure of its ſpirituous Part ſwims in a thicker Serum; and thus ſticks in almoſt all the ſmall Veſſels, creating Obſtructions almoſt every where, and conſequently Cachexies. The ſecond State is a thick Blood, deprived of a great Quantity of its Serum, whence it is

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ſaid to be Aduſt or Melancholick. In this State it eaſily ſtagnates in the ſmall Veſſels, and produces ſcirrhous and ſcorbutick Obſtructions. Thirdly, the Blood may abound with too great a Quantity of Serum, and thereby open to itſelf Paſſages and Channels, into which the Blood does not naturally flow. All theſe morbid States are owing to the undue Contraction of the Veſſels, and their undue Action upon the Fluids, without which Action theſe Fluids cannot circulate. Thus when the Serum is too thick, the Elaſticity of the Veſſels is too ſmall to propel the Blood as it ought to be; and hence follow Leucophlegmacies, Chloroſes, Suppreſſion of the Menſes, Cachexies and other Diſeaſes of the ſame kind. When the Quantity of Serum is too ſmall, the Blood, if we may ſo ſay, becomes ſolid, and thus eludes the Force of the Veſſels, forming very ſtubborn Obſtructions, ſuch as Scirrhus's, and others of that kind. Theſe Obſtructions are often followed by Hæmorrhages difficult to be cured, as is ſeen in Dropſies. Laſtly, when the Veſſels are continually bathed in a great Quantity of thin Serum, they loſe their Elaſticity, and the Blood being too much diluted, relaxes and weakens the ſolid Parts, paſſes in unuſual Channels, and thus produces Diarrhæas, Diabetes, Hæmorrhages, Dropſies, *&c.*

What can be the Effect of Iron in all theſe Caſes is evident from its Taſte; which in crude Iron, as well as in all its Preparations, is Styptick, contracting the Fibres of the Tongue, Palate, and of the whole Mouth; whence follows a more copious and frequent Diſcharge of Saliva. Hence we may eaſily judge, what will be the Effect of all martial Preparations taken inwardly; namely, to conſtringe the Fibres, to reſtore and increaſe their Elaſticity; by which Effect, the Fluids ſtagnating in the Inteſtices of the Fibres will be expelled; the inſpiſſated Juices broken to peices, and made more fluid; and the Motion

of all the Fluids accelerated. The same Effects are produced in the Fluids. The fibrous Part of the Blood is constricted, and the Serum squeez'd out of it; and that either to the Advantage or Prejudice of the Patient, according to the State of his Solids and Fluids; and therefore great Judgment is required in prescribing Iron, and its several Preparations.

In cachetick Cases, such as Leucophlegmacy, Chlorosis, Suppression of the Menses, and other Diseases in which the Blood is glutinous and viscid, the Preparations of Iron are of sovereign Use; for by its astringent Quality it brings the Fibres of the solid Parts into Contacts, expresses the Serum contained in the Interstices between them, and throws it into the Vessels. Thus the Blood is dissolved, the Elasticity of the solid Fibres restored, the viscid Juices attenuated, and a due Circulation every where restored. Iron is far from being of the same Benefit in scirrhous, scorbutick, or melancholick Affections; for the Blood being in these Cases too much deprived of Serum, the Vessels already too tense are further corrugated by the Action of Iron, and their oscillatory Motion thereby impair'd. Hence the inspissated Blood moves still more slowly, the fibrous Part being gradually more compacted and deprived of its Serum. In such Cases therefore Iron is hurtful, and though it be called Aperient, it can neither resolve these kinds of Obstructions, nor stop the Hæmorrhages arising from them. Excessive Evacuations, whether by Stool, Hæmorrhage, continual Sweats, Dropsies, or other Affections, proceeding from too large a Proportion of Serum, are accurately to be distinguished by Physicians. Iron is of Service in all such Diseases, as it strengthens the solid Fibres, expels the redundant Serum, and restores the Elasticity of the Vessels; but if these Evacuations arise from stubborn Obstructions, as is usually the Case in Hectick Fevers, all Preparations of Iron are hurtful

ful; for by ſeparating the ſerous from the fibrous Part of the Blood, and forcing that Serum out of the Body, they increaſe both the Evacuations and Obſtructions. Thus though the Uſe of Iron may be proper in the beginning of a Dropſy, it is always hurtful in Dropſies of long ſtanding; becauſe in ſuch the exceſſive Flux of the Serum having already left the fibrous Part of the Blood almoſt dry, would be ſo much increaſed by the Uſe of Iron, that the Patient gradually deprived of the Uſe of all his Limbs would ſpeedily fall a Sacrifice to that Medicine thus injudiciouſly applied.

Thus all the good and bad Effects of Iron are owing to its Stypticity; by this alone it binds and opens. But it is not to be thought, that all Stypticks perform the ſame Effects with Iron in proportion to their Stypticity, Iron having this peculiar to itſelf, that, through all the Stages of Circulation, it preſerves this Quality, whereas vegetable Stypticks are ſo much changed in the *Primæ Viæ*, that the Blood and ſmall Veſſels are hardly affected by them; whereas Iron is only opened by the Juices of the Stomach and Inteſtines, and thereby diſpoſed to Action, as it enters the Blood, by which its Efficacy is diffuſed through the whole Habit, its aſtringent Virtue being every where exerted. It ought however to be obſerved, that Iron is better preſcribed in Subſtance, than when impregnated with Salts; for when united with Salts, it is not ſo eaſily penetrated and diſſolved by the Juices of the Stomach. Laſtly, Exerciſe is extremely proper during the Uſe of Martial Medicines, in order to diſtribute the Particles of the Iron through the whole Habit, to reſtore the oſcillatory Motion of the ſolid Fibres, and to accelerate the Motion of the Blood.

ART.

Art IV. *Copper.*

Copper, *Cuprum* in Latin, χαλκὸς in *Greek*, and *Venus* in the Language of the Chemiſts, is one of the ignoble Metals, ſofter than Iron, ſonorous, of a red Colour, ſhining when poliſhed, fuſible and ductile to a very great Degree. It is ſometimes found pure in the Mines, in form of ſmall Rods, Branches, Globules or Maſſes of other Figures; but moſt commonly it is contained in a kind of Pyrites, or particular Oar. This Pyrites is in ſome Mines of a ſhining Gold Colour, but is not on that Account to be eſteem'd richer, becauſe that Colour is owing to a combuſtible Sulphur. Other Copper Oars are yellow, violet or purple, and ſome are blackiſh and mixed with Gold-Colour'd Sparks, or Veins intermingled with green. Copper is ſeldom found alone, but is generally accompanied with ſome other Metals, ſuch as Silver, Iron, or Lead, and with a large Quantity of combuſtible Sulphur, very difficult to be ſeparated from it. Copper Oar is differently managed according to the other Subſtances mixed with it. If it abounds with Sulphur, it undergoes repeated Calcinations till all the Sulphur be exhaled. The Copper Oar of *Goſlaar* in *Germany* is firſt broke into Pieces of the Size of a Man's Fiſt, then burnt in an open Fire, made of Wood and Charcoal mixed together; and being then broken into ſmaller Pieces, it undergoes two Torrefactions more. Afterwards it is melted into a ſtony red Subſtance, called *Lapis Cupri*; which having ſuffered another Torrefaction, and being after that melted again, becomes black Copper; which after a fifth Torrefaction, becomes quite free from its Sulphur, but ſtill contains Silver. This Silver is extracted in this manner. They mix with the Copper about four Parts of Lead, or more or leſs, according as the Lead they uſe is more or leſs free from Silver.

Theſe Metals thus mixed are melted together by a very vehement Heat, and then pour'd out into Moulds, where they harden into a kind of flat Cakes. Theſe Cakes covered with Charcoal in a proper Furnace are heated with a gentle Fire, till the Lead and Silver melt, and leaving the Copper fall down into a Veſſel ſet to receive them. The Copper remains unmelted like a Spunge or Honey-Comb; and in this State is termed *Æs pauperum*; and is by repeated Fuſions brought to be malleable, and every way fit for uſe. In this laſt Operation, ſome *Scoriæ* appear, which are ſpecifically heavier than the Maſs conſiſting of Copper, Silver and Lead. Theſe *Scoriæ* are afterwards melted with a Mixture of Litharge, and by that means the ſeveral Metals it contains are ſeparated. There are ſome Springs of Copper-waters, of which Vitriol is made by boiling, and Copper may be præcipitated from them, by means of Iron, which has made ſome Perſons imagine, that theſe Waters turned Iron into Copper. There is a famous Spring of this kind near the Carpathian Mountains, the Waters of which corrode Iron thrown into it, and in place there of ſubſtitute Copper; ſo that a Horſe-Shoe, for inſtance, that has lain ſeveral Days in this Water ſhall, when taken out, appear not to be Iron, but Copper.

The richeſt Copper-mines are in *Sweden* and *Germany*. Copper is ſofter than Iron, but harder than Lead or Tin. It ignites or becomes red hot in the Fire before it melts. Its ſpecifick Gravity is to that of Gold nearly as four to nine. When expoſed to Moiſture, it contracts a Ruſt of a green Colour, which when handled has a very unpleaſant Smell, and an auſtere ſharp nauſeous Taſte. It is ſoluble in Water, and is apt to be corroded by all Oils and Salts. A Solution of Copper by acid or fixed alcaline Salts is green; but when made by urinous Salts, it is of a beautiful blue Colour. Filings of

Copper

Copper thrown into the Flame of a Candle burn, and emit a greeniſh Flame, but do not ſparkle; When melted with Nitre, they flaſh a little. If we take one Part of Filings of Copper and ſomething above two Parts of corroſive Sublimate, and diſtil them after being well mixed in a Glaſs Retort, the Quickſilver diſengaged from the Salts comes over in running Mercury; but the Copper remains at the Bottom intimately united to the Salts, in form of a yellowiſh or reddiſh Reſin; ſometimes tranſparent, ſometimes opake; which by the Flame of a Candle may be melted, and ſet on Fire, the Flame it gives being of a green Colour. Copper calcined long by a very ſtrong Fire, till it has loſt all its Sulphur, turns to reddiſh Aſhes; which being expoſed on a Tyle to the Focus of a great Burning Glaſs turns to an intenſely red Glaſs almoſt opake. If this Glaſs be melted on a Peice of Charcoal in the Focus of the ſame Glaſs, it recovers its Form of Copper. From theſe things we may conclude, that Copper contains a large Quantity of combuſtible Sulphur, though not ſo much as Iron; and that the metallick Subſtance is a red vitrifiable Earth. Copper expoſed tothe Fumes of Quickſilver, or of Arſenick, acquires a Silver Colour which is not permanent; melted with *Calamine* or *Zinch*, it turns of a yellow or Gold-colour; the different ways of doing which have been related in the Articles concerning *Cadmia* and *Zinch*. Copper, becauſe of its great Ductility and ſhining Colour, is much employed in domeſtick Uſes; but is ſeldom uſed inwardly as a Medicine, becauſe this Metal, and eſpecially its Ruſt, are reckoned Poiſons; and any kind of Food, or even Water, that has ſtood long in Copper Veſſels, is very pernicious. The Symptoms produced by this Poiſon are Pains in the Stomach and Inteſtines, exceſſive Vomitings, Irritations to Stool, Ulcers in the Inteſtines, ſometimes Difficulty of Breathing, and

ſpaſmodick Contractions of the Limbs, and laſtly Death itſelf, if the Quantity of the Poiſon be great.

The Remedies proper in ſuch Caſes are the ſame as for corroſive Sublimate and Arſenick; firſt to drink a great Quantity of Milk, Oil, or melted freſh Butter; then to drink warm Water till the Patient vomit plentifully. Clyſters made with Oil, Butter or fat Broths, are likewiſe proper; and laſtly, ſtrengthening Cordials and a milk Diet.

Various Recrements of Copper were prepared by the Ancients, and employed in Medicines, ſuch as *Ærugo*, *Flos Æris*, *Æs Uſtum*, *Squamma Æris*; but the *Ærugo*, or Verdigreaſe, is the only Recrement now in uſe. It is a green Ruſt raiſed in Copper Plates; the Method of raiſing it, taken from the Memoirs of the Philoſophical Society of *Montpelier*, is as follows. The Husks, Stones, *&c.* of Grapes, being firſt dried, and after dipped in ſome ſtrong Wine, are laid for nine or ten Days in wooden or earthen Veſſels, till they begin to ferment. Then being ſqueezed together with both Hands, they are formed into Balls, which being put into proper earthen Pots, and Wine poured upon them, till about half is covered, the Veſſels have a ſtraw Lid thrown over them, and are ſet in a Wine Cellar; where the Balls are left in Maceration for twelve or fifteen Hours, being turned every four Hours, that the Wine may penetrate every Part of them. Afterwards the Balls being raiſed about a Finger's breadth above the Surface of the Wine, and ſet upon wooden Bars, the Veſſels are ſhut again, and left in that State for ten or twelve Days more. After which time, the Balls emit a ſtrong and penetrating Scent, and are then fit for diſſolving Copper. For this purpoſe, they are broke and bruiſed with the Hand, that the outer Part of them, which is drieſt, may be exactly mix'd with the inner, which is ſtill moiſt with Wine; then they are ſtratified with Copper

Plates

Plates in the ſame Veſſels upon wooden Bars, the Plates making always the loweſt Stratum, and the Balls the uppermoſt. The Plates are four Inches long and three broad; and if the Copper be new, they muſt be previouſly buried for four and twenty Hours in Verdigreaſe, and then heated a little in the Fire. The Veſſels being filled in this manner and ſhut cloſe, are left without any further Management till the Verdigreaſe is made, which happens ſooner or later, according to the Nature of the Copper. Some Copper yields its Ruſt in ſix or ſeven Days; ſome requires twelve or fifteen Days. The Verdigreaſe being compleatly extracted, the Plates covered therewith are taken out of the Veſſels; and their Edges being moiſtened with the ſtrongeſt Wine, they are wrapt up in Linnen Cloths, dipped in the ſame, and laid in a Wine Cellar for three Weeks. By this, the Makers tell us, the Verdigreaſe is nouriſhed, and then it is ſcraped off from the Plates with Knives, and kept for Uſe.

Verdegreaſe is uſed by Painters and other Artiſts, but is ſeldom preſcribed inwardly by Phyſicians. It is often uſed outwardly to deterge and dry Ulcers, to eat away fungous and callous Fleſh. It is an Ingredient in the *Balſamum Viride Metenſium*, *Unguentum Viride*, *Unguentum Ægyptiacum*, *Unguentum Apoſtolorum*, and *Emplaſtrum Divinum* of *Charas*.

Flos Æris Officinar. is nothing but Copper reduced to ſmall Grains like Millet Seeds; which is done by pouring cold Water upon melting Copper, which thereupon immediately flies every way into Grains, which are collected and kept for uſe.

Æs Uſtum Officin. is Copper reduced to a *Calx* or *Crocus*, either by itſelf, or mixed with Sulphur or Salt, by a long Calcination in a reverberatory Furnace. It is drying and aſtringent with a certain Degree of Acrimony.

Squamma

Squamma Æris Officin. is little different from the *Æs Uſtum*, being only the Particles of Burnt Copper that fly off while it is hammer'd. Theſe *Squammæ*, or inſtead thereof the Filings of Braſs, mixed with Sulphur and the Powder of *Florentine* Orrice, and wore in the Shoes, cures ſtinking Feet; but this Practice may be attended with great Inconveniency; for by checking ſuddenly that ſtinking Sweat, Diſeaſes of a worſe kind may enſue.

The moſt uſual Medicines prepared with Copper are the *Green Precipitate*, deſcribed among the Preparations of Mercury; and the *Ens Veneris* of Mr. *Boyle*, which is made in this manner:

Take of Colcothar, made with blue Hungarian or Copper Vitriol, well calcined and waſhed, two Drachms; of Sal Ammoniac, four Drachms; mix them well, and ſublime the Flowers three times by cohobating them on the Caput Mortuum. *The Doſe is from one to ſix Grains. Theſe Flowers are much commended by* Boyle *in the Rickets; and are ſaid to be a powerful Remedy in a virulent Gonorrhœa.*

The *Tinctura Cærulea*, or *Collyrium Cæruleum*, is made from Copper, Sal Ammoniac, and Lime-Water. It is uſed for Diſeaſes of the Eyes, to ſtop Gonorrhæas, and to deterge and dry Ulcers.

The Chemiſts imagine, that a red Sulphur is contained in Copper, called by *Helmont*, *Ignis Veneris* and *Sulphur Philoſophorum*, which he ſays prolongs Life. They try to extract this Sulphur for two Reaſons; firſt to obtain thereby a ſoveraign Remedy in all Diſeaſes, and a preſent Anodyne in all Pains. Secondly, To deprive Copper of its red Colour, and make it a white Metal reſembling Silver. But I can find no other Sulphur in Copper, except that bituminous Inflammable Subſtance common

mon to all Metals, and indeed to all combuſtible mixt Bodies. In giving ſuch large Encomiums to this Sulphur, the Chemiſts therefore only ſhew their own Ignorance, for the red Colour of Copper is owing to the Earth, not to the Sulphur contained in it; and it is perfectly vain to pretend to extract a fixed Sulphur from that Metal; for theſe red Tinctures are only the Copper itſelf divided into very ſmall Parts, and ſuſpended in different Menſtrua, as appears by precipitating theſe Particles. They have likewiſe vainly endeavoured to rob Copper of its red Coat, as they term it; for what they call white Copper, does not owe that Colour to the Loſs of its red Sulphur, but to the Addition of a white Earth, found in the fixed alcaline Salts, which they make uſe of. This *Becherus* has very juſtly obſerved.

CHAP. II.

Of Perfect Metals.

ART. I. *Silver.*

SIlver called *Argentum* in *Latin*, ἄργυρος in *Greek*, *Luna* by Chemiſts, is a noble or perfect Metal, of a ſhining white Colour, ſonorous and ductile, but yet more imperfect than Gold. As it is found in the Mines, it is diſtinguiſhed into Natural and Rude. Natural Silver is that which is dug up pure and unmixed, being found either in the Clefts and Fiſſures of Rocks or Stones, or mixed with Sand or Earth without Stones. It is met with in very different Forms; ſometimes in Branches, fimbriated in ſmall Filaments like the Hairs of a Man's Head, granu-

granulated, or reſembling the Leaves and ſmaller or larger Twigs of Trees. It has likewiſe been found in large Maſſes; ſuch as that mentioned by *Olaus Wormius*, which, as taken out of a Mine in *Norway*, weighed an hundred and thirty Marks.

Rude Silver is that which is found in Oars, and muſt be refined by Fire. Theſe Silver Oars are in ſome Mines red, being mixed with Arſenick; in ſome, of a Lead Colour, owing to the Sulphur contained in them; in others, black, purple, Aſh-coloured, *&c.* according to the different Subſtances mixed with the Silver. It is often found in Gold, Copper, Tin and Lead Oars, in different Quantities. There are Silver Mines in many Countries, *Italy*, *Germany*, *Hungary*, *Norway*, *England*, &c. but the richeſt are thoſe of *Potoſi* in *Peru*, and thoſe of *Mexico*. Almoſt all the Lead Mines in *England* contain ſome Silver; but the richeſt are thoſe of *Cardiganſhire* in *Wales*, where two thouſand Weight of Lead Oar yeilds from ten to twenty Pounds of Silver.

Silver is eaſily ſeparated from Lead; nothing being required but to melt the Lead in Moulds made of Aſhes, and placed in a proper Manner in the Furnaces. The Fire is then continually blown with Bellows, till the Lead being vitrified is abſorbed by the Moulds, the Silver remaining behind. The Extraction of Silver from the *Peruvian* and *Mexican* Oars, is much more difficult; becauſe theſe Oars are extremely hard, and alſo mixed with bituminous, ſulphureous, arſenical or vitriolick Subſtances, which carry off with them a conſiderable Part of the Silver, or burn it to *Scoriæ* along with themſelves. Therefore according to the different Nature of the Oars, the Workmen purſue different Methods. If the Oar be too hard to be broken to pieces with Hammers, it is burnt in a moderate Fire, both to make it brittle, and to diſcover more exactly what Subſtances are

mixed with the Silver. They next grind this Oar in Mills to a fine Powder; and if the heterogeneous Subſtance be Sulphur or Antimony, they mix with the Powder Ruſt or Scales of Iron. If it contains Iron, they add Sulphur or Antimony, and thus calcine all theſe Subſtances together; and then a ſufficient Quantity of Quickſilver is added. If the Quickſilver runs not into Spheres, but into ſmall oblong livid Parts like little Worms, it is Proof that the Oar contains Lead or Tin. To ſeparate theſe Metals, they uſe certain Compoſitions called *Magiſteries*, the Baſis of all which is *Æs Uſtum*, or calcined Copper. Thus the Silver Oar, being intimately mixed or amalgamated with the Mercury, is rubbed and waſhed for a long time in Water; and whatever Subſtance cannot unite with the Quickſilver, is carried off by the Stream of Water, the Amalgama remaining pure and entire behind. This Amalgama is afterwards ſqueezed in Linnen Cloths, to preſs out the Quickſilver; and the Silver Cakes or Loaves that remain, are expoſed to the Fire in earthen Veſſels, to evaporate any Quickſilver that ſtill adheres to them. Afterwards the Metal is melted into Maſſes, adding about one fifth Part of Copper as an Allay. We have already ſhewn the Method of ſeparating Copper from Silver, when it is in great Quantities. When the Quantity of Copper is ſmall, it is ſeparated by Lead in a Cupel, made of Bones calcined to Whiteneſs, or of Aſhes waſhed till no Salt remains in them. Theſe Aſhes, or powdered Bones, being wrought into a Paſte with Water, are made into Cupels, and then very well dried. Theſe Cupels are ſet on live Charcoal in a Furnace, and about four or five Parts of Lead are melted in them. To this melting Lead one Part of Silver to be refined is added, and when both Metals are in perfect Fuſion, the Fire is increaſed, by continually blowing till the Lead is vitrified, and driven to the Sides

Sides of the Cupel, and by the Addition of a proper Quantity of Quickſilver, is either abſorbed, or flies off in Fumes, the pure ſhining Silver remaining alone in the Cupel.

If Gold be mixed with Silver, the way of ſeparating this Metal, called in *French par le Depart*, is different from all the former. If the Quantity of Gold be very conſiderable, as much Silver muſt be added as to make it four times the Weight of the Gold. Then they are melted together, and thrown into *Aqua Fortis*, which diſſolves the Silver, and leaves the Gold untouched in form of a black Powder, or Mud; from which the Solution being poured off by Inclination, it is frequently waſhed, and then melted. The diſſolved Silver is precipitated by the Affuſion of about twelve or fifteen Parts of common Water, and at the ſame time immerging Copper Plates, to which the Silver ſticks, like an Aſh-coloured Powder, which being dried is melted into Maſſes or Lumps.

Silver is harder and leſs ductile than Gold; and its ſpecifick Gravity is to that of Gold a little leſs than as five to nine. It is likewiſe lighter than Lead. It never contracts Ruſt, grows black by the Fumes of Sulphur, is diſſolved by *Aqua Fortis*, but not by *Aqua Regia*. It is not deſtroyed by Lead, but being long expoſed to a ſtrong Fire with Antimony, is ſomething diminiſhed by the ſulphureous Part of that Metal. When expoſed to the Focus of a great burning Glaſs, either on a Tyle, or on a Peice of Charcoal, it flies all off in Smoke, but very ſlowly, and is never turned to Glaſs, as the other Metals hitherto mentioned; becauſe the ſulphureous Principle, to which Metals owe their Ductility, Shining, and Opacity, is ſo cloſely united with the metallick Earth, that they ſooner fly off together, than they can be ſeparated into their Principles.

The Solution of pure Silver is limpid, and its Cryſtals are of no Colour; but if it contains any Copper, the Tincture is greeniſh or bluiſh. The Taſte of theſe Cryſtals is intenſely bitter. Silver made to mix any way with common Salt melts into a ſemidiaphanous Maſs reſembling Horn, which for that reaſon is called *Luna Cornea*, which it is very difficult to reduce to Silver, becauſe being volatile, if it be expoſed to a ſtrong Fire, it flies almoſt all off in Vapour.

The *Arabians* attributed to Silver the Virtue of ſtrengthening the Head and Brain, and of recruiting the Animal Spirits. Theſe Virtues have been exaggerated by the Chemiſts. Hence, in many compound Medicines of the *Arabians* of the cephalick and ſtrengthening kind, Silver is an Ingredient; and among the Chemiſts we find *Tincturæ Lunares*, *Luna potabilis*, *Diaphoreticum Lunare*, *Bezoardicum Lunare*, *&c.* However, as we dare not maintain, that Silver is quite deſtitute of medicinal Virtues; ſo we cannot affirm, that theſe cephalick and ſtrengthening Qualities belong to it. It is an Ingredient in the *Confectio de Hyacintho* and *Pulvis Lætificans* of *Charas*; and is often uſed inſtead of Leaf Gold, to cover Bolus's and Pills.

The moſt uſual chemical Preparations of Silver are the *Lunar Cryſtals* and the *Lapis Infernalis*. The Lunar Cryſtals, called alſo *Catharticum Argenteum*, are thus prepared:

Take of pure Silver, an Ounce; Spirit of Nitre, four Ounces; make a Solution, and evaporate one third; then ſet the Remainder in a cool Place, and Cryſtals will be found, which being carefully ſeparated, the remaining Liquor is again to be evaporated to an half, and then ſet to cryſtallize as before. Diſſolve all the Cryſtals in clear Water, adding an Ounce of purified Nitre; Evaporate this Solution, and cryſtallize again as before.

fore. Theſe laſt Cryſtals are to be kept for Uſe by the Name of Luna Hydragoga, *or* Vitriolum Lunæ Purgans. *The Doſe is from three to eight Grains. This Medicine is recommended in the Palſy, and Aſcites, being reduced to a fine Powder, and made into Pills with Crumbs of Bread. Theſe Pills have been called* Pilulæ Lunares Boylei, *and powerfully evacuate the Water in Dropſies.*

The *Lapis Infernalis*, or Perpetual Cauſtick, is thus made:

Take of pure Silver, an Ounce; of Spirit of Nitre, three Ounces: Make a Solution, and evaporate the Phlegm in a Sand Heat to one Half. Pour the Remainder into a large Crucible, ſet in a moderate Charcoal Fire, ſo as to boil. When the Ebullition is over, and the Maſs appears to be ſunk, increaſe the Fire, and it will appear fluid like Oil. Then throw it into Metalline Tubes, firſt warmed, and when it is hardened, keep it for Uſe, well guarded from a Moiſt Air. It is a notable perpetual Cauſtick, ſoon corroding and conſuming both the Fleſh and Bones, to which it is applied.

Several blue or Sapphirine Lunar Tinctures are highly celebrated by Chemiſts; but are very improperly ſaid to be Tinctures of Silver, being in reality Tinctures of Copper, and therefore not fit for internal Uſe. The Tincture of Silver is altogether limpid and diaphanous, but its Virtues are hitherto unknown. The Women prepare a Water or Waſh of the Solutions of Silver and Quickſilver, wherewith to die their Hair black. The beſt of that kind is thus made:

Take of granulated Silver, an Ounce; of Aqua Fortis, *two Ounces: Make a Solution. Diſſolve*

likewiſe apart ſix Drachms of Quickſilver in ſix Ounces of Aqua Fortis. *Mix the two Solutions, and add to them as much common Water, as will ſo far weaken them, that the Liquor will not corrode Copper, or raiſe Bubbles on its Surface. Keep this Liquor two or three Months before it is uſed.*

Art. II. *Gold.*

GOLD, *Aurum* in *Latin*, χρυσὸς in *Greek*, *Sol*, by the Chemiſts, is the moſt noble, moſt perfect, and heavieſt of all Metals; ductile, ſonorous, and of a reddiſh Yellow Colour. It is ſometimes found Pure and Unmixed in the Earth, in Rivers, and in the Clefts and Fiſſures of Stones, either in Duſt, or larger Pieces. The Oars, from which Gold is extracted by Fire, are ſometimes a kind of Pyrites, of an Aſh or Purple Colour. It is often found with Orpiment, and is likewiſe ſometimes hid in the Mines of other Metals, eſpecially of Silver, from which it muſt be ſeparated by various Contrivances. There are many Rivers, among the Sands of which Gold is found in ſmall Grains; and there are large Gold Mines in *Norway*, *Hungary*, and *Guinea*; but the richeſt are in *Peru* and *Mexico*. It is extracted from its Oar much in the ſame manner as Silver, by Torrefaction, beating to Pieces, mixing with Quickſilver, Waſhing, *&c.* It is ſeparated from Silver and the other Metals, with which it is mixed in the Cupel, by Means of Lead, or by Cementation; from Silver alone, by that Method called in *French*, *Le Depart*, or *L'incart*, or in the dry Cupel, by Antimony.

The Way of ſeparating Gold from other Metals by Lead, was ſhewn in the foregoing Article. Cementation is performed in this manner;

The Gold, being formed into thin Plates, is put into a Crucible with the Cement Powder, ſtratum ſuperſtratum, *the Powder making both the Upper and Lower* ſtratum. *The Crucible being full, is covered with a Lid with a ſmall Hole in the Middle, and the Joints are well luted; then it is expoſed to a ſtrong Fire for ſix or eight Hours, till it is all over red-hot. Afterwards the Fire being extinguiſhed, the Gold Plates are cleared from the Duſt with a Hare's Foot waſhed in Urine and dried. The Cementing Powder is made of one Part of Sal Ammoniac, two Parts of common Salt, and four Parts of powdered Bricks, well mixed together.*

This Method of Refining does not altogether ſeparate the other Metals from Gold, but renders it ſoft and ductile. The Method of ſeparating Silver from Gold, *par le Depart*, was ſhewn in the laſt Article. Quartation, called *L'incart* in *French*, is performed almoſt the ſame Way, with this Difference only, that three Parts of pure Gold are to be added, and the Solution is to be performed with *Aqua Regia*, by which the Gold being diſſolved, the Silver remains untouched.

Gold is purified with Antimony, when the Quantity of Silver mixed with it is ſo ſmall as to be neglected; in which Caſe Antimony deſtroys the Silver, reducing it to *Scoriæ*, and leaves the Gold Pure.

One Part of Gold is firſt of all melted with two or three Parts of Antimony, then kept boiling in a Cupel, by a continual gentle blowing of the Bellows, till all the Antimony vaniſhes, leaving the Gold perfectly free from Silver.

The Difference between the Purification by Lead and by Antimony is this, that the greateſt Part of

the Lead being vitrified, it penetrates the Cupel, whereas the Antimony all flies off.

Gold is the heavieſt of all Metals, and of all known Bodies; but withal ſo ſoft and ductile, that it may be extended to 652590 times its firſt Bulk. In all common Fires, it remains fixed; and even when expoſed in the Focus of the greateſt Burning Glaſs, it ſuffers that Heat for a great while before it begins to evaporate. It never contracts Ruſt, and is diſſoluble only in *Aqua Regia*. It is capable of being penetrated by Mercury, and its Texture ſo far opened as to be turned into a ſoft Amalgama. It may be calcined by common Sulphur, if ſet on Fire and flaming. When diſſolved by *Aqua Regia*, it may by Oil of Tartar *per Deliquium* be precipitated into a blackiſh Powder, which being gently heated, either by Fire or by Attrition, flies off into the Air with a great Noiſe; whence it has the Name of *Aurum Fulminans*. The ſame Effect will happen by uſing Spirit of Sal Ammoniac, or any other urinous Spirit, inſtead of Oil of Tartar; but then the Fulmination requires a greater Degree of Fire.

The Analyſis, or Reſolution of this Metal, we have hitherto attempted without any Succeſs. The Sulphur and Earth ſeem to be ſo ſtrictly united in it, as not to be ſeparable by the common Powers of Fire; and in the Focus of the greateſt Burning-glaſs, intire Parcels of it fly off, without any apparent Reſolution into its Principles.

The Uſe of Gold in Phyſick was unknown to the ancient *Greeks*. The *Arabians* firſt talked of its medicinal Virtues, and mixed it in their Compoſitions, being previouſly reduced to thin Leaves, upon a Perſwaſion that it comforted the Heart, and exhilarated the Spirits; and that therefore it was proper in Palpitations of the Heart and in Melancholies. The Chemiſts add further, that a moſt powerful fixed Sulphur is contained in Gold, which if it be

mixed

mixed with the Blood preſerves it from all Corruption, and reſtores and revivifies human Nature in the ſame manner as the Sun, the great Original of this Sulphur, enlivens all Nature. Many Authors are of a quite different Opinion, becauſe the Effects of Gold are found not to anſwer theſe great Pretenſions; and it may be reaſonably queſtioned, whether Gold be at all uſeful in Phyſick. Leaf Gold is an Ingredient in the *Confectio Alkermis Regia*, the *Confectio de Hyacintho*, *Pulvis Diamargaritæ Frigidus*, *Pulvis Lætificans* and *Pulvis Pannonicus*, all of *Charas*. It is likewiſe uſed to gild Pills and Bolus's.

The Virtues of the chemical Preparations of Gold are equally dubious, becauſe they ſeem to derive their Energy not from the Gold, but from the Menſtrua and other Subſtances mixed with it. Whence we may conclude, that the moſt valuable and moſt precious of all Metals is the moſt uſeleſs in Phyſick, except when conſidered as an Antidote to Poverty.

The Tincture of Gold, or *Aurum Potabile*, made in the beſt manner is this:

Take of pure Gold, half a Drachm; of Spirit of Salt, two Ounces; make a Solution, and pour upon it of the limpid eſſential Oil of Roſemary, an Ounce; ſhake the Mixture well, and the Spirit of Salt will ſubſide, deprived of its yellow Colour, which is retained in the Oil that ſwims at the top. Separate this Oil from the Spirit by Inclination. Mix it with four or five Drachms of Spirit of Wine highly rectified; digeſt them for a Month, and the Mixture will acquire a purple Colour. This Tincture is Diaphoretick and Sudorifick, and is recommended in malignant Fevers. The Doſe is from three to fifteen Drops.

But

But after all, this is not a genuine Tincture of Gold, being only the Gold divided into very ſmall Parts by the *Spicula* of the *Aqua Regia*, ſwimming in the Oil of Roſemary; neither do we know any radical Tincture of Gold, which may not by evaporating the Oil be reduced to a Powder, and by melting the Powder into Gold. The chief Virtues of this Tincture are owing to the Oil of Roſemary.

The *Aurum Fulminans* is eſteemed not only for its fulminating Quality, but alſo for the medicinal Virtues attributed to it; and is prepared in this manner:

Take of Spirit of Nitre, an Ounce; diſſolve therein a Drachm of Sal Ammoniac; throw into this Solution a Drachm of Gold-duſt, and diſſolve it by a moderate Heat. Then pour into the Solution by Drops Oil of Tartar per Deliquium, *till the Ebullition ceaſes. The Gold will be precipitated like a yellow Mud. Then having poured off the Liquor by Inclination, waſh and edulcorate the Powder, and dry it in the Shade.*

This Powder, even by a gentle Attrition, goes off with a violent Noiſe, and taken inwardly is thought to be Diaphoretick; but it may more truly be ſaid to relax the Inteſtines, as was obſerved by *Ludovicus* and *Koning*, who affirm, that this Preparation being given in Fevers, in which the Patient inclines to a Diarrhæa, promotes that Diſcharge, and on that account ſometimes proves fatal.

Laſtly, the Chemiſts tell us very wonderful things about the *Philoſophers Stone*, or an Univerſal Tincture, which being projected on the ignobler Metals, penetrates their Parts ſo intimately, without any viſible Shew, that they are in an inſtant changed to a Metal, that has the Colour and Weight of Gold. They amuſe us likewiſe with an univerſal Medicine,

which

which cures all Diſeaſes, and purges the Blood from all Diſorders by a kind of Irradiation; ſo that Life and Health may be preſerved for a very long time, if not to Eternity. As I know nothing of this univerſal Medicine, I can ſay nothing about it. And for the Philoſophers Stone, the Materials from which it is to be prepared are hitherto undetermined, as well as the Method of preparing it, whatever impertinent, ignorant Pretenders may boaſt. By theſe Pretenſions, however, they have found the Secret, if not of making Gold, yet of getting Gold already made into their Clutches; and for that reaſon every prudent Man ought to beware of them.

PART III.

Vegetable Substances.

THE Vegetable Substances shewn in a Course of the *Materia Medica*, may be reduced to seven Kinds, *viz.* Roots, Barks, Woods, Leaves and Flowers, Fruits, Juices, Fungus's and other Excrescences. Each of these Heads shall be the Subject of a particular Section; and in each Section we shall observe an alphabetical Order.

SECT. I.

Roots.

1. *Radix Acori.* Acorus Root.

THREE Kinds of Acorus are used in the Shops. The first is called *Acorus Verus, falso Calamus Aromaticus Græcorum & Offic. C. B. P.* It is brought from *Flanders*, *Holland*, and the *East-Indies*. By a chemical Analysis it yields a considerable Quantity of acid Spirit, a little volatile urinous Salt, some gross Oil, some essential Oil, some

ſome Earth, and a ſmall Portion of fixed alcaline Salt. The Principle, which predominates in this Plant, is like a volatile urinous Salt mixed with an eſſential Oil, and accordingly it is carminative, aperient, attenuant, emmenagogue, diuretick, diaphoretick, alexipharmack, cordial; and is ſucceſsfully uſed in Cholicks and malignant Fevers, being given in Powder, from half a Drachm to a Drachm; and in Infuſion, from half an Ounce to an Ounce. This *Acorus* is not the *Calamus Aromaticus* of the ancient *Greeks*.

The ſecond Kind is named *Acorus Indicus vel Aſiaticus Officin.* It differs from the former only in Size, and in being of a much ſtronger Smell. It comes from the *Eaſt-Indies* and from *Canada*; and its Virtues are the ſame with thoſe of the firſt kind.

The third Kind is the *Acorus Adulterinus, ſive Pſeudacorus Officin.* being the Root of the *Iſis Paluſtris Lutea Tabernemont.* It is very little in Uſe at preſent, but was formerly ſubſtituted for the *Acorus Verus*. *Dodonæus* ſays, it is very aſtringent.

2. *Anchuſa Orientalis.* Alkanet of the *Levant*.

Lemery ſays, this Root is likewiſe called *Alkanet* of *Conſtantinople*. It is, in all probability, the Root of one Species of *Echium*; the common kind of which is named in *Engliſh Vipers Bugloſs*; and it is uſed in the Countries, where it grows, to give a red Colour to Silk and Cotton Stuffs.

The common Alkanet, *Anchuſa Offic.* is brought from *Languedoc* and *Provence*, being the Root of the *Bugloſſum Radice Rubra, ſive Anchuſa Vulgatior*. The Bark is of a red Colour; and the whole Root is aſtringent, proper in Hæmorrhages of all kinds; and is likewiſe uſed by Dyers. Apothecaries alſo employ it to colour their Ointments, particularly the *Unguentum Roſatum*; but for this purpoſe, it muſt be boil'd in Oil, for it does not readily communicate its

its Tincture to Water. The Ancients used it as a Cosmetick, as is mentioned by *Galen*.

3. *Behen.* Been.

Authors distinguish two Sorts of *Been*, white and red, but both are different from the *Arabian Ben*, which is the *Glans Unguentaria Offic.*

White *Been* is a Root, which *Rauwolfius* found at the Foot of Mount *Libanus*, and which *Tournefort* brought from the *Lesser Asia*. The Plant, to which it belongs, is named *Jacea Orientalis Carthami facie* J. R. H. according to *Vaillant*. It is cordial, antispasmodick, and good to kill Worms.

Red *Been* is imported in round Slices. Some believe it belongs to a Species of *Limonium*, or Sea Lavender; but its Origin is not certainly known. It is supposed to have the same Virtues with the former, and moreover to be astringent.

4. *Butua sive Pareira Brava Lusitan.* Pareira Brava.

This Root is commonly about the bigness of the little Finger; though sometimes larger. It is of a brown Colour, wrinkled both ways on the Surface, but its inner Substance is fibrous like the *Thymelæa*. *Zanoni* says, that when cut transversly, it represents the Sun and his Rays; but this Conceit is without Foundation. It is of a sweetish Taste, with a disagreeable Mixture of Bitter, and without any Smell. Authors pretend, that this Root comes from *Brazil*, for this reason, because we get it from the *Portugueze*; but it is much more probable, that it is of *East-India* Growth, for a Surgeon sent it from *Surat* to *M. de Jussieu*, by the Name of *Boutua* Root, and wrote, that it grew along the Coast of *Malabar*.

This Root is much celebrated by the *Portugueze*, as an Alexipharmack, and an Antidote against all poisonous Plants. It is undoubtedly a very good Diuretick, and very proper in nephritick Cholicks.

The

The Way of uſing it is to boil about a Quarter of an Ounce, ſcraped or raſped, in two or three Pints of Water till reduced to a Pint; of which, the Patient is to drink a Glaſs every half Hour, in a warm Bath, his Body being before prepared by Bleeding and Clyſters.

A ſmall Quantity of the Syrup of the five opening Roots may be added to the Decoction; and by this Method alone M. *Geoffroy* cured the great Abbé *Bignon* of a Stone Cholick, and made him void a very large Stone. When given in a large Doſe, it heats conſiderably. It ſeems to act by diſſolving the ſlimy Matter contained in the Kidnies and Bladder; and has been given with great Succeſs, mixed with Balſam of Capivi in Gonorrhæas, after ſufficient Evacuations. The Decoction already mentioned has likewiſe done Wonders in hepatick Cholicks, ariſing from an Obſtruction of the Orifice of the Gall Bladder, a Glaſs being drank every three Hours, to the Quantity of a Quart. The *Portugueze* uſe this Root, powdered, for Quinſeys, and Diſeaſes of the Thorax.

There is likewiſe another Root, called White *Pareira Brava*, ſaid to come from *Braſil*. It is more woody than the former, compoſed of Fibres, of which ſome are longitudinal, the reſt orbicular. The Bark of this Root is white, but the Subſtance within yellow, like Liquoriſh.

5. *Contrayerva Offic. Drakena Cluſ.* Contrayerva.

The firſt of theſe Names was given to this Root by the *Spaniards*, from its Alexipharmack Quality; for *Contrayerva* in *Spaniſh* ſignifies *Counter-Poiſon*. The ſecond Name was given it by *Cluſius*, in Memory of the famous *Drake*, who brought it from *America*, and ſent it to that great Botaniſt. It is reckoned Sudorifick, Alexipharmack, Aſtringent, and

and good in Epidemical Dyſenteries. The *Engliſh* put *Contrayerva*, Cochineal, and a little Nitre, into Ptiſanes for the Small-pox. The Doſe of the Root in Subſtance is from half a Drachm to a Drachm; and in Infuſion from half an Ounce to an Ounce. The Plant that comes neareſt it is the *Caapia* of *Piſo*.

6. *Coſtus ſive Coſtum Officin.* Coſtmary.

We are ſtill ignorant of the *Coſtus* of the Antients, of which the *Greeks* had three Kinds. What now goes by that Name is of an acrid, bitteriſh Taſte, and of a Smell like Violets, but more diſagreeable. It is named *Coſtus Iridem redolens* C.B.P. and is an Ingredient in the *Theriaca Andromachi*. *Pliny* diſtinguiſhes two Kinds, the White and Black; and the *Arabians* had likewiſe two Kinds, one Sweet, the other Bitter. The Doſe of our Coſtmary is from twelve Grains to half a Drachm, and in Infuſion from two Drachms to half an Ounce. It was antiently uſed as a Perfume. Hence this Line of *Propertius*;

Coſtum molle date & blandi mihi thuris honores.

It was likewiſe employed in Sacrifices.

7. *Curcuma & Terra merita Offic. Cyperus Indicus Diaſcorid.* Turmerick.

We have two Kinds of Turmerick, the Long and the Round. The Long is moſt uſed in Phyſick, and is the Root of a Plant called *Cannacorus Indicus ſive Curcuma Officin.* The *Indians* make uſe of both Kinds to ſeaſon their Victuals, as the *Europeans* do Saffron; they employ it likewiſe in dying and painting Stuffs. The Long Kind is a good Stomachick, Antiſcorbutick, and Antihyſterick, and very proper in the Jaundice. The Doſe is from twelve Grains to half a Drachm.

8. *Cyperus*

8. *Cyperus Offic.*

There are three Sorts of *Cyperus*. The firſt called *Cyperus rotundus Orientalis Major* C.B.P. is Carminative, Emmenagogue, Stomachick, and Diuretick. *Hippocrates* recommends it in Diſeaſes of the Uterus, and *Simon Pauli* in Ulcers of the Bladder, mixed with the *Schænanthe*.

The Second Kind is named *Cyperus Rotundus noſtras, & Vulgaris* C.P.B. which is leſs Aromatick, and of leſs Efficacy than the former.

The Third Kind is the *Cyperus Odoratus Radice longa*, or *Cyperus Longus Officin.* Its Virtues are of the ſame ſort with the other two, but it poſſeſſes them in a leſs Degree.

9. *China Offic. Chinna vel Schinna Tabernæmont.* China Root.

China Root is of two Kinds, Oriental and Occidental; but we are as yet uncertain what Plant it belongs to. Many Authors, and *Kæmpfer* among the reſt, ſay it is a Species of *Smilax*; but others pretend, that it is a *Senecio*, which is in the *Leyden* Garden, and about which *M. Ruyſch* once promiſed to publiſh ſome new Obſervations.

Soon after the Pox broke out in *Europe*, Phyſicians brought this Root into very great Vogue for the Cure of that Diſeaſe. They uſed it in Sudorifick Ptiſanes, and the Emperor *Charles* V. having taken it with Succeſs, ſeveral Treatiſes were written concerning its Virtues; among which we have an elegant Piece of the great *Veſalius*, then Phyſician to that Emperor. But as this Ptiſane did not continue to have always the deſired Succeſs, Mercury was ſubſtituted in its Room. It has likewiſe been much uſed in Sudorifick Ptiſanes with *Sarſaparilla*, and *Lignum Vitæ*; and its Name is taken from the Country from whence it is brought.

10. *Galanga Offic.* Galangal.

The Galangal Root is either Small or Great. The Small Kind is the Root of a Plant called *Lagondi Indorum Herman.* It is Carminative, Stomachick, Cordial, Alexipharmick, Emmenagogue, and Diuretick. It is given from fifteen Grains to half a Drachm, in Subſtance; and in Infuſion from half a Drachm to two Drachms; and is an Ingredient in many Compoſitions.

The Second Kind, called *Galanga Major*, is the Root of a Plant named *Banchale Indorum Herman.* and is brought from *Java* and *Malabar.* It is not uſed in Medicine, but the Makers of Vinegar employ it to give Strength to that Liquor.

11. *Hermodactylus Officin.* Hermodactil.

The Hermodactil is the bulbous Root of a kind of *Colchicum*, called *Colchicum radice ſiccata alba C.B.P.* which is different from the Root of the common *Colchicum* in that it remains white when dried. This Root was uſed commonly among the Antients as a Cathartick, but its Action is very ſlow, tedious, and fatigueing. It is better when corrected with Aromaticks, and is now ſometimes mixed with Jalap, in Rheumatiſms. The Women in *Egypt* eat roaſted Hermodactils to make them fat.

12. *Jalappa ſeu Jalapium Officin. Mechoacanna nigra quorund.* Jalap.

Jalap is the Root of a kind of Night Shade, called *Jalappa Officin. fructu rugoſo* J.R.H. It was unknown to the Antients, and alſo in *Europe*, till the Diſcovery of *America.* It is one of the beſt Purgatives which we now have, and is uſed with great Succeſs in Obſtructions of the Viſcera of the Abdomen; being given in a Bolus in the Quantity of twelve or fifteen Grains, with *Mercurius Dulcis.* It may

may likewiſe be joined with the *Peruvian* Bark, in the Proportion of twenty-four Grains to an Ounce of Bark, and made into a ſoft Electuary with three Ounces of Syrup. A Drachm of this Electuary will purge very well; and hence we ſee that the Bark aſſiſts Jalap in its Action; for in a Doſe of this Purge there is about three or four Grains of the Root. It may be advantageouſly given in this Manner in habitual Intermitting Fevers, accompanied with a bad Habit of Body.

The Reſin of Jalap ought to be given in very ſmall Doſes; that is, from five to twelve Grains at moſt; and it ought to be remembered, that if this Reſin is not either very well diſſolved or mixed, it ſticks to the Folds of the Inteſtines, and raiſes great Heats and other Diſorders. Therefore it is always better to give it in Subſtance. This Reſin loſes its Virtue by being long kept. If given in the Quantity of fifteen or twenty Grains, it purges very briskly; and *Simeon Pauli* compares it on that account to Scammony. *Wepfer*, in his Treatiſe *De Cicuta Aquatica*, mentions ſome Experiments made with Jalap Root on Dogs; the Event of which was, that the Dogs died, and their Inteſtines were found to be perforated.

13. *Ipecacuanha*, *Radix Braſilienſis.*

We have three Kinds of *Ipecacuanha*, the Grey or Aſh-coloured, the Brown, and the White; which laſt, called alſo *Pſeudipecacuanha*, M. *Tournefort* diſcovered to have no Virtue, and is perhaps that kind mentioned by *Piſo*; ſo that, properly ſpeaking, we have only two Kinds of *Ipecacuanha*, that of *Braſil*, and that of *Peru*, called *Bexuguillo*. The Plant which produces this latter ſort is unknown; and the Root itſelf was not known in *France* till the Year 1672. One M. *Le Gras*, who was not a Phyſician, brought it firſt over, and gave it to M. *Craquenel*, an Apo-

thecary, but it ſucceeded very ill in his Hands, he having given it in the quantity of two Drachms for a Doſe, which was too great. In 1687 M. *Garnier* attempted to re-eſtabliſh its Credit; in order to which he applied himſelf to the elder *Helvetius*, who made ſeveral ſucceſsful Trials of it. After which the King purchaſed of *Helvetius* the Secret and Manner of giving it, and made it known to all the World; and it was afterwards of great Service in the Armies and Hoſpitals. This Root is given from fifteen Grains to half a Drachm, and we ought in no Caſe to exceed a Drachm. It never fatigues the Stomach, and is the beſt *Succedaneum* for the Emetick Tartar. It is the beſt Specifick in Dyſenteries hitherto known, acting in ſuch Caſes not only as an Emetick, but alſo deterging Ulcers in the Inteſtines, by a Mucilage contained in it like that of Marſh-Mallows, by which it in ſome meaſure ſupplies the villous Coat of the Inteſtines, when corroded and deſtroyed by the Diſeaſe. It alſo powerfully ſhakes and evacuates the Glands of that Viſcus. Its beſt Effects are in old Dyſenteries, after many other Medicines have been tried, and the Body has by theſe been ſufficiently prepared; then the firſt or ſecond Doſe generally produces viſible good Effects; or, if they ſhould happen to miſs, it ought to be continued every Day in the quantity of three or four Grains, acting in that Caſe as an Alterative.

This Root has an Emplaſtick and Deterſive Quality joined together; and, though it does not appear ſenſibly Acrid, it produces in thoſe who powder it an Oppreſſion in the Thorax, Difficulty of Breathing, and Spitting of Blood. It is likewiſe offenſive to the Eyes, increaſes the Diſcharge of the Lacrymal Glands, and, when the Tears do not find ready Vent, the Eyes ſwell. Theſe Effects are probably owing to the Mucilaginous Quality of this Root. The Analyſis of Ipecacuanha is to be ſeen in the

Memoirs

Memoirs of the Academy of Sciences for the Years 1700 and 1701.

The ſame Cautions ought to be obſerved in giving Ipecacuanha, as in giving Emetick Tartar. It is taken in Subſtance finely powdered, either mixed in a Liquid, or incorporated with a proper Syrup into an Opiate. It may likewiſe be given in Infuſion or Decoction.

14. *Iris Florentina.*
Florentine Orice, or Flower-de-Luce.

This is the Root of a Plant called *Iris Alba Florentina C.B.P.* It is reckoned proper to attenuate the Lympha, which ſtuffs the Bronchia and Glands of the Inteſtines. It is often joined with Hydragogues in beginning Dropſies, to ſcower the Glands of the Meſentery; and a kind of *Ratafia* is likewiſe made of it for the ſame Purpoſe. It is good in Aſthmas, joined with other Medicines; and is an Ingredient in the *Theriaca* and *Mithridate.*

15. *Mechoacanna Officin. Rhabarbarum album quorund.* Mechoacan.

This is the Root of a Species of *Convolvulus*, named by *Ray*, *Convolvulus Americanus Mechoacanna dictus.* It is diſtinguiſhed from Briony Root by being more viſcid, being without Acrimony, and of a faint nauſeous Taſte. It is ſaid to be a ſtrengthening Purge, being given in Subſtance from half a Drachm to an Ounce; but is not purgative in Decoction. The *Spaniards* prepare from it a white *Fecula*, called by them *Lac Mechoacannæ*, half an Ounce of which is a Doſe, powdered and mixed in Broth. Since Jalap has been diſcovered, *Mechoacanna* has been but little uſed.

16. *Nardus.* Spikenard.

The *Greeks* had five kinds of Spikenard; but we know but three, the *Indian*, *Celtick*, and *Mountain* or *Spaniſh*.

The *Nardus Indica*, or *Spica Nardi*, is the Root of a Plant of the *Eaſt Indies*, named by *Breynius Gramen Cyperoides Aromaticum*. What looks like the Filaments of the Root are not properly ſuch, but the Remains of the decayed Leaves. It is a very good Attenuant, is uſed in Cholicks, and promotes Sweat and the Menſtrual Diſcharge. It is an Ingredient in many Electuaries, and other Compoſitions uſed externally; ſuch as the *Oleum Spic. Unguentum Nardinum*. *Galen* relates, that he cured an Emperor of the Cholick in his Stomach by rubbing that Region with this Ointment. This Spikenard may be given inwardly, from half a Drachm to a Drachm; and in Infuſion from half an Ounce to an Ounce and an half.

The *Nardus Celtica* is a ſmall knotty Root, brought from the *Tyrol* and belongs to the Plant named *Valeriana Celtica*, *I. R. H.* It has nearly the ſame Virtues with the *Indian Nardus*.

The *Nardus Montana*, or *Hiſpanica*, is the Root of a Species of *Valerian*, which grows in the Mountains of *Leon* in *Spain*; but we are not certain what the Ancients called by this Name. It is not much uſed in Phyſick, but its Virtues are like thoſe of the two former.

17. *Niſi. Gen-ſeng Sinenſium. Garen-toguen Hiroquæorum.*

This Root belongs to a Species of *Araliaſtrum*, according to *Saraſſin* and *Vaillant*. It is ſaid to be found in the *North* Part of *China*, and in *Canada*. Father *Laffiteau*, a Jeſuit, now Biſhop of *Siſteron*, wrote a Treatiſe about it; in which he calls it *Aure-*

liana

liana Canadenſis, *Sinenſibus Gen-ſing*, *Hiroquæis Garentoguen*. Botaniſts have been divided in their ſentiments about the Original of this Plant. *Hollon* thought it an *Opium*; and *Kæmpfer* believed it to be a *Siſarum*. Whatever be in that, that which comes from *Canada* is certainly known and demonſtrated every Year in the Royal Garden. We owe the Diſcovery of it to the Jeſuits. The *Oriental* Kind grows in the *Northern* Part of *China*, in the Peninſula of *Corea*, and in *Tartary*; and the Names both of this and of the *Occidental* have been given it from ſome Reſemblance it is ſuppoſed to bear to the Human Body, being nearly of the Figure of the Mandrake.

The *Gen-ſing* of *Canada* differs from that of *China*, in being neither ſo yellow nor ſo bitter. Its Taſte is very agreable, and it has been uſed with Succeſs in Fevers. In *Tartary* and *China* it is highly eſteemed, being purchaſed for twice its Weight in Silver, and is thought to retard the Effects of Old Age, and to recruit decayed Strength. They infuſe it in Wine or Broth, to the quantity of half a Drachm or a Drachm. By its bitter Aromatick Taſte, it diſcovers it ſelf to be attenuant, ſtrengthening, and deobſtruent. *Laffiteau*'s Treatiſe was publiſhed at *Paris* in 1718, and in that Year is an Account of it in the *Memoirs of the Royal Academy*.

18. *Pyrethrum Officin.*
Pellitory of *Spain*.

There are two kinds of this Root in the Shops, both deſcribed by *Lemery*. It is extremely acrid, and on that account is chewed to evacuate the Glands of the Throat, and in Palſies of the Tongue. It is likewiſe uſed as a Sternutatory in Lethargies, but is ſeldom given inwardly.

19. *Rhabarbarum seu Rheum Officin.* Rhubarb.

We do not certainly know the Plant, of which Rhubarb is the Root. It is probably a Species of *Lapathum*, called by *Herman Lapathum Sinense*. It is brought from *China*, but *Muntingeus* pretends that he cultivated it in *Holland*, in his Book *de Vera Herba Bullanica*.

It is one of the best and mildest Catharticks in the whole *Materia Medica*. It operates very well on the Bile, and on all the Viscera of the Abdomen, and at the same time strengthens the Nervous Fibres. On these Accounts it is proper in weak Stomachs and Intestines. It is given in Substance from twelve Grains to half a Drachm, and in Infusion from half a Drachm to a Drachm and a half; and in a small Dose, it becomes an excellent Alterative. It purges the Bile very effectually, and has a greater Force than any other Purgative in opening Obstructions of the Liver. It is found, by certain Experience, to evacuate the Bile preferably to any other Fluid. On this account it is the *Panacea* of Children, and also because it strengthens the Stomach, and carries off all sorts of Matter that stagnates therein. It is a very good Remedy for Worms, and is given to Children subject to Chronical Diseases, in a Ptisane called Rhubarb-Water. The Use of Rhubarb is, however, dangerous when the Kidnies or Bladder are suspected to be inflamed, because it heats considerably; and for this Reason it is improper in Hæmorrhages. It is very good in Loosenesses, because it purges and strengthens at the same time. In Cachexies it ought to be given in small Quantities for a considerable time.

20. *Rha-*

20. *Rhaponticum Officin.*
True Rhapontick.

This Root has been very well deſcribed by *Proſper Alpinus.* It is very like Rhubarb, but may be diſtinguiſhed from it by its leaving a mucous Taſte in the Mouth, its Mucilage being diluted by the Saliva; and becauſe when it is cut it appears regularly marbled, of a Red, White, or Yellow Colour; and theſe Colours are diſpoſed in a radiated Manner. It is leſs purgative than Rhubarb, requiring a double Quantity to produce the ſame Effect. It is likewiſe a little aſtringent.

21. *Saleb, vel Serapius Turcar. & Officin.*

This is the Root of a kind of *Orchis*, or *Satyrion*, which grows on the Mountains of *Burſia* near *Conſtantinople.* The *Turks* pretend that it is very effectual in reſtoring decayed Strength, and exciting Venery. It is alſo ſaid to prevent Abortion, and is uſed both in Subſtance and in Infuſion.

22. *Sarſaparilla, Salſa-Parilla, or Zalſa Parilla Officin.*

This is the Root of a Plant called by *Caſpar Bauhinus*, *Similax Aſpera ſive Zarza Parilla.* It was formerly uſed in *America* for Venereal Diſeaſes, and afterwards in *Europe.* It is given with Succeſs in all Caſes where the Lympha is to be attenuated and divided, as in the Rheumatiſm, Gout, &c. It may be mixed with *Lignum Vitæ*, *Saſſafras*, &c. in deſiccative and ſudorifick Decoctions; but, when boiled by itſelf, an Ounce is ſufficient for a Quart of Water.

23. *Sima Ruba.*

This is the Root of a *Weſt India* Plant, which produces the Cayan Wood, remarkable for being very

very light. The Root and Bark are ſaid to be excellent Aſtringents, proper in all Sorts of Looſeneſſes, and eſpecially in Dyſenteries. The Doſe of the Root is an Ounce, cut in ſmall Pieces; and of the Bark two Ounces; boiled in three Pints of Water to a Pint. This Decoction the Patient uſes for his common Drink, till he is cured.

24. *Serpentaria Virginiana Viperina*; *Ariſtolochia ſeu Piſtolochia Virginiana.* Snake Root.

This is a fibrous Root, brought from *Virginia* to *England*, and from thence to *France*. *Plukenet* diſtinguiſhes three Kinds of it. It is uſed by the Natives of *Virginia* to cure the Bite of the Rattle-Snake. In *Europe* it is given as a Diaphoretick in the Small-pox, Meaſles, &c. and to kill Worms. It is likewiſe Emmenagogue and Diuretick. The Doſe is from ten Grains to a Drachm; and it is an Ingredient in the Counteſſes Powder.

25. *Turpethum Officin.* Turbith.

This is the Root of a Plant named *Convolvulus Indicus Alatus Maximus foliis Ibiſco nonnihil ſimilibus, Anguloſis.* Raii Hiſtor. *& Turpethum repens foliis Altheæ vel Indicum C. B. P.* It is brought to us from *Zeylon*, *Malabar*, and other Parts of the *Eaſt Indies*. It is a ſlow Purge, and is therefore joined with other quicker Purgatives. It is recommended in the Gout and Palſy, being mixed with Jalap. The Doſe is from a Scruple to a Drachm.

26. *Zedoaria Officin.* Zedoary.

We have two Kinds of this Root, one named *Zedoaria Longa C. B. P.* the other *Zedoaria Rotunda C. B. P.* But they are both the Roots of the ſame Plant, the Body of which is round, and the Protuberances, or Ramifications, long. The Plant they belong

belong to is a kind of *Colchicum*, deſcribed by *Herman* in the *Paradiſus Batavus*. They are brought from the *Eaſt Indies*, and have an aromatick, camphorated Taſte. They are reckoned attenuant, detergent, emmenagogue, carminative, anthelmintick, cordial, alexipharmic, ſtomachick, diuretick, *&c.* The Doſe is from five Grains to half a Drachm in Subſtance, and it may be uſed in Infuſion like Tea. Some correct *Opium* with this Root. *Simeon Pauli* pretends it is the beſt Carminative now known, and values it as a Grand Specifick for voiding Wind. *V. Acta Hafniæ.*

27. *Zinziber ſeu Zingiber Officin.* Ginger.

This is a tuberous, knotty Root of a Plant named by ſome Authors *Iris Latifolia Tuberoſa*, *Zinziber dicta*, *flore albo.* It grows in the *Eaſt Indies*, and is now cultivated in the *Caribbee* Iſlands, from whence we have it. When the green Root is eaten in any conſiderable Quantity, it is Purgative. The *Indians* eat it as we do Creſſes. When dry, it is very aromatick and attenuant, and is uſed to correct ſome Catharticks, ſuch as *Agaric*, &c. It ſtrengthens by its oily Part, and enlivens the Blood, and is likewiſe good in the Scurvy. It is an Ingredient in many Compoſitions. The Doſe is from three to ten Grains. The Confectioners in *England* and *Holland* preſerve it with Sugar; which Preſerve is called *Zinziber Conditum*, Candied Ginger, and is carried to Sea as a Remedy againſt the Scurvy. Candied Nutmegs are uſed for the ſame Purpoſe. Though Ginger is a very Acrid Root, it is very apt to turn carious.

SECT.

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SECT. II.

BARKS.

1. *Caſſia Caryophyllata, & Cinnamomum Americanum Officin.* Canelle Geroffl ée Gallor.

THIS is the Bark of a Plant named by *Hernandes*, *Caninga*, and by *Herman*, *Myrtus Arborea Americana*. It is ſeldom uſed in Phyſick. The Taſte of it is acrid and aromatick, and its Virtues are the ſame with thoſe of Cloves; inſtead of which it is often ſold in Powder by the Druggiſts, as being much cheaper. However, this is a very harmleſs Impoſition.

2. *Caſſia Lignea, Caſſia Odorata, & Hylocaſſia Officin.* Woody Caſſia.

We have two Sorts of this Bark, differing from each other in Degrees of Fineneſs. It differs from Cinnamon, in that when chewed it becomes mucilaginous, and at length entirely melts in the Mouth, which Cinnamon never does, and has likewiſe a more aromatick Taſte. The finer Sort is the ſecond, or inner Bark, of the *Carua Hort. Malabar.* and the coarſer, the ſecond Bark of the Tree that produces the *Malabathrum*, or *Indian* Leaf. Some ancient Authors named this Bark *Darſennum*, and hence ſeveral Apothecaries have been ignorant enough to take it, when mentioned in Preſcriptions, or Diſpenſatories, for Arſenick. It has the ſame Virtues with Cinnamon, but in a leſſer Degree. It is a little aſtringent, and for that Reaſon proper in Fluxes.

3. *Cinna-*

3. *Cinnamomum Officin. Caſſia Zeilanica* C. B. P. Cinnamon.

The Tree, which produces Cinnamon, grows without Culture in the Iſland of *Zeylon*, and the Trade thereof is entirely in the Hands of the *Dutch*, who are Maſters of the Coaſts of that Iſland; and the King of *Zeylon* dare not ſell it to any but them. This Tree has two Barks; the firſt called in *Latin*, *Liber*, has but the ſixth Part of the Virtue of the other, which lies within it. The Berries, by Coction and Expreſſion, yield an oily Subſtance, of which Candles are made for Perſons of the firſt Rank; and from the Neck of the Root they draw a delicious kind of Camphire, very rarely to be met with in *Europe*, which has a Smell made up of that of the common Camphire, of Cinnamon, and of Cloves. The old Trees yield a Reſin of a very agreeable Smell, reſembling that of the Oil of Roſe Wood; and Travellers relate, that when they are within twenty Leagues of *Zeylon*, they ſmell the Cinnamon Trees.

Cinnamon is an excellent Stomachick and Cordial, Digeſtive, Attenuant, Emmenagogue, *&c.* It corrects the bad Qualities of reſinous Purges, and ſtrengthens the Stomach when weakened by too much Purging. The eſſential Oil of Cinnamon is good for the Tooth-ach, being dropped into the Hollow of rotten Teeth, where the Pain is ſeated. The Oil of Cloves has the ſame Effect. Of this Oil and Sugar is made a very pleaſant kind of *Elæo-Saccharum*, very effectual in many Caſes, being firſt diluted with Water. The Golden Powder of *Zell* is made of this *Elæo-Saccharum*, mixed with a little Cinnabar, to give it a red Colour. It is given in Canary Wine, to ſtrengthen the Stomach, and recruit the decayed Spirits, and makes an excellent Ratafia.

4. *Cortex*

4. *Cortex Winteranus, Canella Magellanica, Cinnamomum Magellanicum.* Winter's Bark.

There are two Kinds of this Bark, the *Cortex Winteranus Verus*, and *Cortex Winteranus Spurius, ſive Coſtus Corticoſus Officin.*

The true Kind is the Bark of a Tree called by *C. Bauhin Laurifolia Magellanica Cortice Acri.* It is outwardly of a greyiſh or aſh Colour, and brown within; and of an acrid Taſte and Smell. *Winter*, whoſe Name it bears, was Companion to the famous *Drake.* He found it on the Coaſts of the *Magellanic* Straits, at a Time when his Soldiers and Sailors having eaten of a poiſonous Animal, called the Sea-Lion, were ſeized with a kind of Scurvy, which made them break out in Blotches all over their Bodies, but by the Uſe of this Bark they were happily cured. This Bark is much uſed, eſpecially in *England*, as a good Stomachick, and ſome pretend that it cures Intermitting Fevers, taken in the quantity of a Drachm, before the Fit.

The ſecond Kind is the Inner Bark of the *Cinnamomum ſive Canella alba tubulis albis* C. B. P. It is of a white Colour, very brittle, not mucilaginous, and of an acrid Taſte; but its Virtues are leſs than thoſe of the firſt Kind, with which it is often confounded in the Shops; and *Lemery* himſelf did not well perceive the Difference there was between them. It grows commonly in *Jamaica*, and is uſed in *England* as a Stomachick. Sir *Hans Sloane* has deſcribed both Kinds.

5. *Cortex Ligni Guaiaci.* Lignum Vitæ Bark.

This Bark ſhall be deſcribed in the next Section, with the *Lignum Vitæ* it ſelf.

6. *China*

6. *China Chinæ. Kina Kina. Cortex Peruvianus Officin.* The *Peruvian*, or Jeſuite's Bark.

This Bark is brought from *Peru*, and there are three Kinds of it: The firſt is of a bitter, reſinous Taſte, and not ſo Red as the common Sort; the ſecond, leſs than the firſt, is covered with a Moſs; the third is the fineſt, and imported in ſmall Pieces.

The *Peruvian* Bark is uneven and thick, its Colour reſembling that of Cinnamon, Coffee, or Ruſt of Iron. It is of a bitter Taſte, and has no Smell but what comes from the Wood. The Name *Kina Kina* is taken from the Count of *Cinchon*, who was Vice-Roy of *Peru*, when this Medicine was diſcovered. The Tree to which it belongs is not as yet ſufficiently known. It is ſaid to have Leaves like the Plumb-Tree, and Flowers like the Orange-Tree. *Herman* ſays, it is a high large Tree, like the Lime-Tree, and that it bears Berries. It grows in the Inland Part of *Peru*, on the Mountains near *Loxa*, or *Loja*, in the Province of *Quito*. The *Spaniards* ſay that the Uſe of its Bark was diſcovered in the following Manner.

Near the Town of *Loxa* was a Lake ſurrounded by *Quinquina* Trees, before the *Spaniards* ſettled in that Country. Theſe Trees being by an Earthquake, or ſome other Accident, thrown into the Lake, communicated a bitter Taſte to the Water; ſo that the Inhabitants, who uſed to drink it, were obliged to leave it off. However, an *Indian* who had a violent Fever upon him, and conſequently a great Drought, finding no other Water, was forced to drink of this, by which he was perfectly cured of his Fever. He related this Adventure to ſome of his Friends, who having made the ſame Experiment, were likewiſe cured. Upon this, they ſet themſelves to diſcover what had given this febrifugous Quality to the Water of the Lake, and found, in the firſt

place,

place, that a great number of Trees had fallen into it; and, secondly, that after a certain Time, these Trees, being rotted in the Water, it lost its bitter Taste, and, at the same time, its Virtue. Whence they concluded, that this Virtue was owing to the Trees. Afterwards they tried all the Parts of them infused in Water, and thus discovered that their whole Virtue resided in the Bark. The *Spaniards* having conquered their Country, this invaluable Medicine was kept a great Secret; and they obliged themselves, by Oath, never to discover it to their Conquerors, hoping thereby to see them all perish by the Epidemical Fevers that then reigned in the Country. The Secret was inviolably kept, till the Year 1640. when a *Spanish* Soldier quartered in an *Indian*'s House, who had got into the good Graces of his Landlord, was seized with a severe Ague. The *Indian*, touched with Compassion, and fearing, perhaps, that he should have a worse Guest, if this Soldier happened to die, brought him the Bark, which having taken, he was soon perfectly cured. The Soldier, surprized at such an unexpected good Effect of an unknown Remedy, made use of all his Address to discover the Tree to which this Bark belonged, and at length succeeded. For some time he contented himself with curing his Fellow Soldiers, but never told them by what Means. But the Vice-Queen, Wife of the Count *De Cinchon*, then Vice-Roy of *Peru*, being seized with an Intermitting Fever, which had so far baffled the Skill of her Physicians, that her Life was despaired of, and this Report having reached as far as *Loxa*, the Soldier, who was Master of the Secret, told his Commanding Officer, that if he would allow him to go to *Lima*, he would cure the Vice-Queen. The Officer having informed himself of the Cures he had performed in that Country, readily gave him not only leave to go, but also Letters of Recommendation and proper

Cer-

Certificates. Being arrived at *Lima*, he was admitted to make Trial of his Medicine, on this Condition, that he was to take as much himſelf as he gave to his Patient. This he eaſily agreed to; and having ſucceeded in a very little time, he was amply rewarded, and then prevailed on to diſcover the Secret; which the *Spaniards* made uſe of from that Time forward with ſo great Succeſs, that the Phyſicians were aſtoniſh'd and half ſtarv'd. In 1649 Father *de Lugo*, a Jeſuite, then Procurator General of his Order, and afterwards a Cardinal, brought ſome of this Bark to *Rome*, and the Society began to bring it into Reputation in *Europe*; by which they got a great deal of Money in a ſhort Time. They ſold it for more than the Weight in Gold; and to diſguiſe it the better, never parted with it but in Powder. From that time it was called the *Jeſuites Powder*, becauſe theſe Fathers were the ſole Maſters of it, and had brought it into uſe. Two Drachms were at that time thought ſufficient for the Cure of any intermitting Fever, becauſe they never gave it, till after many other Medicines had been made trial of. The Phyſicians were divided in their Opinions about it; ſome looking on it as a divine Medicine, while others believ'd it dangerous, and even fatal in many Caſes. Many Treatiſes were written, ſome for it, others againſt it; but the *Engliſh* Phyſicians having at length made ſeveral Experiments with it, that might be depended on, it came to be greatly in vogue in *England*; and the famous *Morton* wrote his *Pyretologia* in its Defence. In 1679 a Perſon named *Tabor*, who, to make himſelf more conſiderable, changed his Name to *Talbot*, came into *France*; where having cured the Dauphin of a ſtubborn Quartan Ague, by this Medicine, it gained a great Reputation, and the King purchas'd his Secret, and made it publick. It was then termed the *Engliſh Remedy*, and conſiſted of an

Infuſion of the Bark in Wine. There was a little Treatiſe publiſh'd at that time, with this Title, *The* Engliſh *Remedy for Fevers.*

The Bark is an infallible Remedy for all intermitting Fevers, if the following Circumſtances be obſerved.

1. The Patient ought to loſe ſome Blood, and to be purged before he takes the Bark; and if he is of a dry Habit of Body, he ought to be kept for ſome time to a liquid Diet; becauſe before the depuratory Fermentation is begun, the Fluids ought to be well diluted.

2. The Bark made uſe of ought to be compact or ſolid, of a reddiſh Colour, like Cinnamon, of a faint Smell, a little muſty; bitter and aſtringent to the Taſte, and not kept too long.

3. It ought to be given in large Doſes. For inſtance, a Drachm of powder'd Bark may be taken at a time, in a Glaſs of white Wine or Water, and repeated every three Hours, till the Time of the Return or Paroxyſm be over. It may likewiſe be given in Infuſion or Decoction. An Ounce boiled in a Quart of Water, till reduc'd to a Pint, being drunk by large Draughts in the Interval between two Fits.

4. It ought to be continued for a long Time after the Fever has ceaſed, gradually diminiſhing the Doſe and the Frequency of repeating it. This is a ſure way to prevent a Return.

This Remedy appears ſometimes to fail; that is, the Fever returns, after a certain Quantity of it has been taken; but this is never owing to Want of Efficacy in the Bark, but from Ignorance of the true Method of taking it. Thus, if the Body is not ſufficiently prepared, it cannot act as it ought, becauſe of the Obſtructions it meets with in the *Primæ Viæ*

Viæ and in the Blood-veſſels. If the Bark be bad, nothing is to be expected from it; and if the Doſe be too ſmall, or not continued for a ſufficient Time, it only deadens the Fever for a time, but does not radically deſtroy it. It is therefore a groundleſs Prejudice that the Bark fixes Agues, or that the Uſe of it is ever attended with bad Conſequences, eſpecially in the Stomach, as many pretend. The Patient is ſeldom thoroughly cured without ſome kind of Criſis, eſpecially by Stool or Urine. This latter is the beſt, and the Phyſician may be aſſured that his Patient is ſafe, if he makes a greater Quantity of Urine than uſual. The Bark has likewiſe been given in Clyſters with Succeſs; but then the Quantity uſually taken by the Mouth ought to be tripled.

This admirable Specifick is likewiſe a good Alterative, and conſequently proper in an infinite Number of Caſes where there is no Fever; for it ſtrengthens the Stomach, excites the Appetite, *&c.*

This Medicine is not hurtful to weak Lungs, as ſome imagine, Experience having often ſhewn the contrary; and it has often prov'd very ſucceſsful in Catarrhs and other Kinds of Fluxions, even when accompanied with Spitting of Blood, as in the Caſe of the late Mareſchal *Talard*. But in theſe Caſes other Pectoral Medicines are to be joined with the Bark.

Some join with the Bark given in Fevers, dried Arum Root, Sal Ammoniac, Cinnamon, *&c.* Sal Ammoniac is the moſt proper of any, being mixed in the Quantity of half a Drachm to two Drachms of Bark.

7. *Kina-Kina Aromatica Palo de Calenturas. Caſcarilla, Cortex Eleterii ſive Scacarilla Offic. Cortex Peruvianus griſeus ſive ſpurius.*

This Bark is of a greyiſh or Aſh Colour, of a Taſte like Cloves, and of an agreeable aromatick

Smell, ſomething like Amber. *Juncherus*, *Valentini*, and other *Germans* ſay, it is the Bark of the *Canella Magellanica*, *Laurifolia Cortice Auri*, C.B.P. confounding it with the *Cortex Winteranus*, which is a Miſtake. We are not as yet throughly acquainted with the Tree, which produces the true *Caſcarilla*. It yields a very agreeable eſſential Oil, which uſed formerly to be mixed with Snuff to give it a fine Smell. But lately the *Germans*, and eſpecially M. *Stahl*, have recommended this Bark as an excellent Medicine in Diſeaſes of the Thorax, and as a good Stomachick. *Apenus* a *German* Phyſician has written a Treatiſe about it, in which he praiſes it in malignant Fevers, the Plague, Dyſenteries, and Weakneſs of the Inteſtines.

8. *Coſtus Caryophillatus.*

This is the firſt Bark of the *Caſſia Caryophillata* above mentioned.

9. *Cortex Tamariſci.* Tamariſc Bark.

This Bark is order'd in Aperient Decoctions, to remove Obſtructions of the Viſcera of the Abdomen, to promote the Flux of the Menſes, *&c.*

SECT.

SECT. III.

Woods.

1. *Agallochum & Xylo-Aloes Officin. Pao Agula.* Aloes Wood.

C. *Bauhin* diſtinguiſhes three kinds of this Wood. The firſt, called *Agallochum præſtantiſſimum Calambac Indorum*, is the moſt reſinous Part of the Wood, and melts on the Fire. The ſecond is the *Lignum Aloes vulgare Officin.* called alſo *Lignum Ætites.* It always looks as if it were worm-eaten, and containing a great Quantity of reſinous Matter is burnt in the Country where it grows inſtead of Candles. The Juice got by cutting the freſh Wood is very cauſtick and poiſonous, and it ſometimes deprives the Workmen of their Sight.

The third kind is the *Calambour*, called likewiſe *Lignum Ætites*, becauſe of its Colour. It is brought from the *Philippine* Iſlands, and is uſed to make Snuff-boxes, Heads of Canes, *&c.*

Aloes Wood is a powerful Cordial and Stomachick. It is given in Subſtance from a Scruple to a Drachm, and in Tincture from one to two Drachms. The Monks in the *Eaſt Indies* make it into Beads; and it yields by Diſtillation a very agreeable Eſſential Oil, which is a good Sudorifick.

2. *Acajouanum Lignum.*

This is not the Wood of the Tree that bears the *Acajou* Nuts. It is of a red Colour, and never touch'd by Worms, which renders it very proper for Furniture; but it is ſeldom uſed in Phyſick.

3. *Arundo Saccharifera.* The Sugar Cane.

See Sugar, in the Section of Juices.

4. *Aſpalathum Officin.*

We are not throughly acquainted with the Tree to which this Wood belongs; and as the Antients, eſpecially *Pliny* and *Galen*, have varied very much in their Accounts of it, the ſame thing may be ſaid of them. The *Arabians* have called by this Name a large thorny Tree, which they have not deſcribed.

5. *Braſilianum Lignum. Braſil* Wood.

This is the Wood of a Tree called *Pſeudo-Santalum rubrum Braſiliæ*, C. B. P. It is uſed by Dyers, in dying Red, as the yellow *Braſil* Wood is for that Colour.

6. *Calamus Aromaticus verus Officin.*

This is the true *Calamus* of the moſt antient *Greeks*. *Fuſchius*, *Braſſavola*, and ſeveral other Authors, have given this Name to the *Acorus verus*, mentioned in the firſt Section; but *Proſper Alpinus* and other Phyſicians, more exact than the former, have diſcover'd that the true *Calamus* is a Reed; whereas the *Acorus* is a Root. This Reed is of an Aromatick and very pungent Taſte.

7. *Campechianum Lignum.* Log-wood.

This Wood, ſometimes called *Jamaica Wood*, does not grow in that Iſland, but upon the Coaſt of the Bay of *Campechy*. It is chiefly employ'd in dying.

8. *Cedrinum Lignum.* Cedar-wood.

This is the Wood of a Tree named *Larix Orientalis fructu rotundiore obtuſo*, J. R. H. *Cedrus Libani*,

bani, J. B. It is of a red Colour, ſomething reſinous, and of a ſtrong agreeable Smell. It is ſaid never to rot, and is therefore much valued for Furniture, and is ſometimes uſed by Phyſicians as a Sudorifick.

9. *Citrinum Lignum. Lignum Jaſmini.*

This is the Wood of a Tree called by Sir *Hans Sloane Nerion Arboreum foliis anguſtiſſimis.* It is of a cloſe Texture, very reſinous, and burns like a Candle, ſmelling, while it burns, like Jeſſamin.

10. *Colubrinum Lignum.*

This Wood comes from a Kind of *Solanum*, which produces the ſmall *Nuces Vomicæ.* It is brought from the Iſlands of *Timor*, *Ceilon*, &c. and is of a very bitter Taſte. It is a ſtrong Purgative and Emetick, taken in Infuſion from a Scruple to a Drachm; and in Subſtance from ten Grains to a Scruple. But tho' it purges the *Europeans* ſo much as often to throw them into Convulſions, the *Indians* ſupport it perfectly well. It is likewiſe uſed to kill Worms, according to the Obſervations of *Antonius de Hyde.*

11. *Ebenus Officin.* Ebony.

The Tree which produces this Wood is very tall and thick, and grows in the Iſland of *Lucon*, one of the *Philippines.* It is a black cloſe Wood, ſmooth to the Touch.

There is a kind of Ebony which is red, called *Grenadilla*, or *Portugueſe* Ebony; and another green ſort, named by *C. Bauhin Ebenus Americana ſpinoſa.* None of them are much uſed in Phyſick; ſome, however, look on the black ſort as ſudorifick and drying, and ſay it may be uſed in Decoction as *Lignum Vitæ.*

12. *Fœtidum Lignum. Kasulai Malabarorum.* Stinking Wood.

This Wood is brought from the Islands of *Timor* and *Salor*. It is of a very offensive Smell, but that Smell is confined to the Wood; from which, however, may be drawn a very agreeable Essential Oil, which taken inwardly causes Sweat.

13. *Guajacum Lignum*; *Lignum Sanctum*, *Palus Vitæ*. *Guajacum* Wood, or *Lignum Vitæ*.

This Wood is either of a whitish or brown Colour. *C. Bauhinus* distinguishes three sorts of it, *Guajacum magna matrice*, *propemodum sine matrice*, *& folio Lentisci*; but these are no more than so many Varieties of the Wood of the same Tree, as Father *Plumier* has observed. This Wood was formerly used for the Cure of Venereal Diseases; the Patients being kept under an exact Regimen, and drinking plentifully of strong Decoctions made of it, for thirty Days. This Method succeeded very well in hot Climates, but did not in *Europe*; for which Reason the Physicians were obliged to call in the Assistance of Mercury; but the *Lignum Vitæ* Diet-Drinks continue still to be very much in use during Mercurial Courses.

14. *Literatum Lignum. Lignum Sinense.* Letter'd Wood.

This Wood brought from *China* is sometimes mark'd with Letters, from whence it has its Name, but it is very little used in Physick.

15. *Nephriticum Lignum Officin.*

This is a close, yellow or reddish Wood, which turns brown when long kept, and loses the greatest Part of its Virtue. It is a very good Aperient and

and Diuretick, and one of the beſt Antinephriticks known in Phyſick. It acts without cauſing any Inflammation in the Kidneys or Bladder. It is uſed in Infuſion, being ſuffer'd to lie in the Water till it turns it yellow or bluiſh, which is generally in two or three Hours time. This Infuſion pour'd into a Glaſs Phial, and placed between the Eye and the Sun, is yellow; but blue when the Eye is between the Sun and it.

16. *Rhodium Lignum.* Roſe-Wood.

The Tree which bears this Wood is believed by *Herman* and others to be a *Cytiſus*. It is brought us from the *Morea*, where it grows; being very reſinous and of a pleaſant Smell, reſembling that of Roſes. The *Hollanders* being in queſt of ſome Ships which periſhed on the Coaſt of *New Holland*, in the thirty third or thirty fourth Degree of Southern Latitude, found on that Coaſt a great Quantity of this Wood. It is alſo much eſteemed in *China*, where its Infuſion in Water is believed to cure or prevent many Diſeaſes. An Eſſential Oil is got from it, which has ſo much the Smell of Roſes, as to be often ſubſtituted for their eſſential Oil; but the Smell of the firſt kind is never ſo ſtrong as that of the other. This Oil is ſometimes uſed by Barbers, to make their Water ſmell agreeably. When the Antients termed this Wood *Lignum Rhodium*, we know not whether they intended to expreſs that it grows in the Iſland of *Rhodes*, or ſmells like a Roſe.

17. *San-Lucianum Lignum.* *Santa Lucia* Wood.

This is the Wood of a Tree named *Ceraſus Racemoſa Sylveſtris, fructu non eduli*, C. B. P. It is brought us from *Lorraine*. It is very tender, and has ſome Smell, but is little uſed in Phyſick.

18. *San-*

18. *San-Marthanum Lignum.*

This is a kind of red *Braſil* Wood, uſed in dying, and which comes from *St. Martha*, near *Carthagena*, in the *Spaniſh Weſt-Indies.*

19. *Santalum Officin.* Saunders.

There are three ſorts of *Saunders*, the White, Red, and Yellow. It is brought from *Siam* and from the Iſlands of *Timor* and *Salor*; but Botaniſts are not agreed to what Tree it belongs. According to *Herman* it is called *Sircanda*, and bears Berries. The White kind comes from the young Trees, the Red and Yellow from the old ones; the former of theſe two being the outer Part of the Wood, the other that next the Pith. The Labourers, who cut this Wood, are often ſeized with malignant Fevers and Deliria of a very ſingular Kind, the affected Perſon generally imitating the Actions of that Trade to which he was brought up; and they have alſo a *Fames Canina* of a very terrible Kind. See *Bontius de Medicina Indorum.* The Yellow Saunders is moſt proper for Phyſical Uſes. It is Reſinous, of an agreeable Smell, and excites Sweating. The White has not ſo ſtrong a Smell, and the Red has none at all; but it may be diſtinguiſhed from *Braſil* Wood by its Roughneſs in the Mouth, when taſted; and accordingly it is a little aſtringent. All the Kinds, eſpecially the Yellow, enter into many Compoſitions; ſudorifick Decoctions are likewiſe made of them.

20. *Saſſafras Offic.*

According to *Herman*, this is the Wood of a *Virginian* Tree, which has Leaves like the Fig-tree, and is called *Pavane* by the Natives. It is of a reddiſh Colour covered by a red Bark. It alſo grows in *Braſil*, and *Piſo* makes three Kinds of it.

It

It has a very agreeable Smell; but that of the Bark is ſtrongeſt, and very like the Smell of Fennel. This Wood is ſudorifick, diuretick, attenuant, and eſpecially proper to remove Obſtructions in the Kidneys and Uterus. It is likewiſe recommended in the Gout and Rheumatiſm as a Sudorifick. The Doſe in Subſtance is from half a Drachm to a Drachm; and in Infuſion or Decoction from one Ounce to two Ounces. It yields an Eſſential Oil by Diſtillation.

21. *Saſſafras ſpurium, ſive Lignum Aniſatum.*

This is the Wood of a Tree called *Aniſum Peregrinum*, C. B. P. and it likewiſe bears the Seeds called *Semina Badian.* The Wood is of a yellow Colour, and differs from the true Saſſafras likewiſe, in being harder and more reſinous, and in ſmelling like Aniſeeds.

22. *Violaceum Lignum. Lignum Polyxandrinum.*

This is a heavy, cloſe Wood, of a beautiful Violet Colour, marbled and ſhining, and capable of a very fine Poliſh. The Smell is pleaſant. The *Dutch* bring it from the *Eaſt-Indies*, and it is uſed to make Cabinets and other Pieces of Furniture. Another ſort of Violet Wood is likewiſe brought from *Holland*, of a more reddiſh Colour, employed for the ſame Purpoſes as the former, but neither of them are uſed in Phyſick.

23. *Xylo-Balſamum.*

This is the Wood of the Shrub that yields the Balſam of *Mecca*, and paſſes for a powerful Cordial, Cephalick and Alexipharmick. It has been ordered in many Compoſitions; but as it is very hard to be procured, Apothecaries generally ſubſtitute for it, either yellow Saunders, or Aloes Wood.

SECT.

SECT. IV.

Flowers and *Leaves.*

1. *Alcanna Offic. Kenna Turcar. & Mauror.*

THIS is the Leaf of the *Liguſtrum Ægyptiacum*, C. M. P. and when reduced to a yellow Powder, is uſed for a Coſmetick by the Natives; namely, by the Men to dye their Beards red, and by the Women, to dye their Nails of the ſame Colour; in order to which, they make it into a ſort of Paſte, with Juice of Lemons. Its Medicinal Virtues are Emmenagogue and Hyſterick; and accordingly it is uſed in the Eaſtern Countries, to cauſe Abortion, and to bring away dead Children.

2. *Dictamnus Creticus Offic.* Dittany of *Crete.*

This Leaf has always been look'd upon as an excellent Vulnerary and powerful Cordial; it is likewiſe an Emmenagogue, Diuretick, *&c.*

3. *Carthamus Officin.* Baſtard Saffron.

This is the Flower of the *Carthamus ſive Cnicus*, J.B. It is brought from *Provence* and from *Germany*, in ſome Parts of which it is uſed as Seaſoning for their Food, in room of the true Saffron. A *Fœcula* is prepared from it, of a fine red Colour, in this Manner:

They boil the Flowers in a Lixivium *of Pot-aſh; then having ſtrain'd the Liquor through a Flannel Bag, they let it ſettle till it depoſites its* Fœcula.

This

This was formerly used by the Ladies as a red Paint; but *Carmine*, which is prepared from Cochineal, is now substituted for it, as being of a finer Colour.

4. *Crocus Officin.* Saffron.

Saffron is the Extremity of the *Pistillum* of a bulbous Plant cultivated in the Province of *Gatinois* in *France*, and in many other Countries. Its Virtues are to enliven the Blood, and remove Obstructions of the Viscera. It is also recommended in Diseases of the Thorax and Brain, and for expelling the morbid Humors in malignant Fevers. It likewise brings on Sleep, mitigates violent Pains, and is commonly an Ingredient in Resolvent Cataplasms and Collyriums. It enters many Compositions; such as the *Theriaca*, *Pilulæ Ruffi*, &c. *Dioscorides* and *Avicenna* say, that three Drachms of Saffron are mortal; but *Etmullerus* observes, that in *Hungary* and *Poland* they eat an Ounce at a time; however, taken in too great Quantities, it causes the Headach, Drunkenness, Convulsions, Deliriums, and other Accidents, which may prove mortal, if not speedily remedied. *Amatus Lusitanus* tells us, that it has been found to cause the *Risus Sardonicus*. The common Dose is from six Grains to a Scruple. A deeper Tincture is to be extracted from Saffron by Water, than by Spirit of Wine; which shews that it contains a saline and a gummy Part.

5. *Cassine Vera Floridanorum.*

This Leaf is used as Tea. It comes from *New France*; and another Species of it, call'd *Apalachine*, from *Missisippi*. It is used with Success in the Gout; but perhaps its principal Virtue is owing to the hot Water. The *Paraguay* is a sort of *Apalachine*, used by the *Spaniards*, especially by those who work in the Mines.

6. *Folium*

6. *Folium Indum, Malabathrum Offic.*

This is the Leaf of a kind of wild Cinnamon-tree, brought us from *Malabar* and other Places of the *Eaſt-Indies*. Theſe Leaves are diſtinguiſh'd from the true Cinnamon Leaves, by their being leſs aromatick. Their Virtues are cordial, alexipharmick, *&c.*

7. *Juncus Odoratus, Scænanthe Officin.* Squinanth or Camels Hay.

This is a kind of *Gramen* which grows in great Plenty in *Arabia Felix*, and other Parts of the Eaſt. The whole Plant, and ſpecially the Flowers, have an aromatick Taſte; which is therefore preferred to the other Parts, though *Galen* choſe the Stalk. Some uſe a kind of Tea made of theſe Flowers, to raiſe Sweat; and the whole Plant was eſteemed by the Antients to be Cordial, Stomachick, Cephalick, *&c.* It is an Ingredient in the *Theriaca*, and named by *C. Bauhin*, *Juncus Odoratus Rotundus*.

8. *Senna Officin.*

The antient *Greeks* and *Romans* were ignorant of this Drug; the *Arabians* having been probably the firſt who uſed it in Phyſick. It is of four kinds.

1. *Senna Alexandrina, ſive foliis acutis*, C. B. P. This is the true Oriental *Senna*, ſmoother to the Touch, and not ſo green as that of *Tripoli*, and its Infuſion is of a pale Colour. The Leaf is of a pretty ſtrong Conſiſtence, and ſhaped like the Point of a Spear. This is the beſt ſort of *Senna*. It purges Phlegm in a particular manner; but as it is apt to gripe, it ought to be given with Caution to thoſe who have weak Viſcera, or are of an inflammatory

tory Habit of Body. It is uſually mixed with Carminatives, ſuch as Coriander Seed, Cinnamon, *&c.* or more effectually with Alcaline Salts. It ought to be well cleaned from its Stalks, and then the Doſe in Subſtance is from a Scruple to a Drachm; and in Infuſion, from two Drachms to half an Ounce. Some have endeavoured to correct *Senna* with the *Scrophularia Magna Aquatica*, but that is now left off, common Tea having the ſame Effect. Some Phyſicians order *Senna* by the Name of *Folia Orientalia.*

2. *Senna Tripolitana.* This kind is greener, larger, rougher, and of a more diſagreeable Smell than the former. It does not yield ſo much by Infuſion; that is, a greater Quantity is required to make the Infuſion of equal Strength, but it is of a greener Colour.

3. *Senna Italica, ſive foliis obtuſis*, C. B. P. *Senna Florentina*, J. B. It is diſtinguiſh'd from the true *Senna*, by the Largeneſs and Roundneſs of its Leaf. This Leaf is likewiſe much thinner and more brittle than the other. It is a very weak Cathartick, but gripes violently, and therefore is ſeldom uſed.

4. *Senna de Mocha.* The Leaves of this kind are longer and narrower than thoſe of the true ſort, its Smell ſtronger, and it gripes more violently. It is not uſed in this Country.

The *Folliculi* of *Senna* are likewiſe in uſe; but of theſe in the next Section.

9. *Thea Sinenſium, Tcha Tſia Japonenſ.* Tea.

This is a Leaf brought from *China* and *Japan*, an excellent Account of which is given by *Kæmpfer*,

pfer, in his *Amœnitates Exoticæ*. The freſh Leaf is ſaid to affect the Head, and to intoxicate; but it loſes theſe Qualities when dried and prepared. The *Japaneze* firſt bruiſe the dried Leaves in Stone Mortars, and then throw a ſufficient Quantity into boiling Water, and ſuffer it to infuſe but a very little while. The greateſt Advantage of Tea, conſidering the Quantity of it that is drank, ſeems to be that it prevents the hot Water from relaxing the Stomach to too great a Degree, becauſe it is a little aſtringent; all the other Effects of this faſhionable Liquor ſeem to be owing to the hot Water. Tea boiled in Milk, in the Quantity of two Drachms to a Pint, has been found to ſtop a Looſeneſs, the Doſe being repeated two or three times. Green Tea drank too freely is prejudicial to weak Lungs. They who are ſubject to this Diſeaſe ought therefore to chuſe Bohea, and to mix Milk with it, in order to make it more laxative.

The *European* Tea is the *Veronica*, and the *American* the *Apalachine*, already mentioned.

SECT. V.

FRUITS.

1. *Acajou Nux.*

THIS Nut grows at one End of a kind of Apple, which is the Fruit of a Tree called in *Braſil*, *Acajaiba*. It is nearly of the Size of a Cheſnut, and ſhaped like a Kidney; and, contrary to all other Fruits, it grows on the Outſide of the Apple. It contains a Kernel of a very pleaſant Taſte, ſomething like that of a Filbert. This Kernel is incloſed in a double Husk or Shell, and between the two is a Diploe, or cellular Subſtance, filled with a very acrid, corroſive Liquor, of a red Colour, and very proper to take off Freckles or Sun-burn from the Face. But Women ought never to uſe it in the time of their Menſes; becauſe in that caſe it often cauſes an Eryſipelas; though even that may be cured by a Waſh made of Brandy and Water.

2. *Anacardium Offic.*

This is a Seed about the Size of a Duck's Heart, and, like the *Acajou*, contains a pleaſant Kernel, and very acrid Liquor. It is brought us from the *Philippine* Iſlands, and Authors are very much divided in their Opinions concerning its good or bad Qualities; but theſe Differences proceed from not diſtinguiſhing between the whole Seed, and the Kernel alone; which laſt, well cleaned, can contain no hurtful Quality; but otherwiſe the Liquor contained in the cellular Subſtance of the Husk, though eaten

with the Kernel, muſt produce Inflammations, and other Diſorders.

In ſome old Diſpenſatories we find a Compoſition named *Confectio Anacardina*, which is not now in Uſe. *Hoffman*, in his Treatiſe of Officinal Medicines, tells a very ſurpriſing Story concerning this Confection; namely, that by the Uſe thereof, a young Man, who was before ſo dull and ſtupid as not to be capable of learning any thing, became in a ſhort time a very great Genius, and comprehended every thing that was taught him with Eaſe. It was thought very proper to help the Memory, and was likewiſe recommended to quicken the Motion of the Blood, and on ſome Occaſions ſaid to cauſe a Fever; which ſhews that the whole Nut, not the Kernel only, was an Ingredient in this Confection.

3. *Amomum Racemoſum.*

This Fruit is an Ingredient in the *Theriaca*, and is ſometimes mixed with ſtrong Purgatives, to qualify them a little. Each Fruit is divided into three Cells, and is of a very pungent Taſte. It is brought from the *Philippine* Iſlands, and is reckoned Carminative, Alexipharmick, Stomachick, *&c.*

4. *Aniſum Sinenſe*, *Semen Badian*, *Fructus Stellatus.*

This is a Fruit contained in a Shell which is of the Figure of a Star; the Kernel is flat, and of a very agreeable Taſte, ſomething like Anniſeed. It is highly eſteemed in *China*, and all over the *Eaſt*. It is uſed to cure any bad Taſte in the Mouth, as a Preſervative againſt the Effects of bad Air, and alſo for the Stone and Gravel. The *Indians* likewiſe ſteep this Fruit in Water, and afterwards ferment the Infuſion; and thus make a kind of Vinous Liquor. The *Dutch* in the *Eaſt-Indies*, as well as the Natives of theſe Countries, mix this Fruit with their Tea and Sherbet.

5. *Aracus*

5. *Aracus Aromaticus, Vanilla Officin.* Vanillio.

This is the Fruit of a *Mexican* Plant, named by *Ray Volubilis Siliquoſa, Plantaginis folio, Mexicana.* Two Kinds of it are brought from *Hiſpaniola*; one with a narrow Pod, which is moſt commonly uſed; the other with a longer and broader Pod, not ſo much eſteemed. It is uſed in Chocolate, both as a Perfume, and to aſſiſt the Digeſtion of the Cacao; however, Chocolate made without Vanillios is much leſs heating, and much more wholeſome. The *Spaniards* uſe it likewiſe from half a Drachm to a Drachm, in ſome Cordial Water, or in Milk.

6. *Areca Officin. Fanfel Pinang Bontii.*

This Fruit is a kind of Cocoa Nut, containing a woody Kernel, incloſed by two different Subſtances. The *Indians* chew the *Areca* rolled up in a *Bitel* Leaf, to help Digeſtion, and to ſtrengthen the Gums, as *Kæmpfer* relates. When freſh it is a little Aſtringent; and of this Fruit the Extract is made, which in our Shops is called *Terra Japonica.* To this Extract they ſometimes join that of another Plant, named *Lycium*, and alſo calcined Shells.

7. *Baccæ Bermudenſes, Pilulæ Saponariæ Anglorum.*

This Fruit, when freſh, is of a black Colour, inclining to red, and ſomething tranſparent. As it grows old it turns ſtill blacker. It contains a yelloviſh Kernel, the Taſte of which is diſagreeable. This Kernel ſteeped in Water raiſes a Froth like Soap, and this Infuſion is uſed in *Chloroſes*, and in Obſtructions of the Liver.

8. *Ben ſive Glans Unguentaria Officin.*

This Fruit was termed *Glans Unguentaria*, becauſe it yields an Oil by Expreſſion, uſed by Perfumers, in perfuming other Oils, and never turns rancid. It is thought proper in the Itch, and ſome other

cutaneous Diſeaſes, as being a good Detergent; and it is ſometimes mixed with Biſmuth and white Præcipitate. Some ſay, that this Oil mixed with a Hazel Nut, or Filbert, and taken in this manner, will purge upward and downward; and it is certain that the Fruit itſelf, made into an Emulſion, is purgative.

9. *Becuiba Nux.*

This Nut is as large as a Nutmeg, and of a brown Colour. It conſiſts of an oily Kernel, incloſed in a woody brittle Husk. A Balſam is drawn from it, very much eſteemed in Rheumatick and Paralytick Caſes. It is brought from *Brazil.*

10. *Cacao Officin.*

We have two Sorts of Cacao, that of the Iſlands, and that of *Caracca* or *Nicaragua*, and of each there is a large and a ſmall Sort. About thirty Nuts (as they are called) are commonly contained in one Fruit. Chocolate is made by firſt torrefying theſe Nuts, to attenuate the Oil they contain, and afterwards they are made into a Paſte, which ought to be of a browniſh Colour, not black. Chocolate thus made ſweetens the Blood, and being mixed with Milk without any Spices, may be given very properly in Conſumptions. It is therefore to be remembred, that Chocolate has very different Effects in heating, or in only nouriſhing and ſtrengthening, according to the Degree of Torrefaction it has undergone, and the Spices mixed with it; and good Judges ſay, that the two Kinds of Cacao mixed together make the beſt Chocolate.

11. *Coffee Officin. Cahve Tartar.*

Coffee is the Fruit of a Tree which grows in *Arabia Felix*, and is brought to us from *Mocha.* The Flower of this Tree is like the Jeſſamine Flower, and the Leaf like the Bay Leaf. The Tree is called

called on theſe Accounts by M. *De Juſſieu*, *Jaſminum Arabicum Lauri folio*, *cujus Fructus apud nos Coffè dicitur*. We may diſtinguiſh two Kinds of Coffee, one ſmall and greeniſh, like Horn; the other large, and yellowiſh. This latter Sort is the leaſt valued, and grows in the Iſland of *Bourbon*. Coffee enlivens the Blood, cures Head-achs, ſometimes promotes the Menſes; and therefore they who are ſubject to large Hæmorrhages or an Eryſipelas ought to abſtain from it; for till then they can never be cured. It is likewiſe hurtful to vapouriſh People, and to thoſe of a bilious Conſtitution; but agrees well enough with the Phlegmatick. It certainly accelerates the Motion of the Blood, and has been often obſerved to cauſe Bleeding at the Noſe.

12. *Cardamomum Officin.*

There are three Kinds of Cardamoms. 1. *Cardamomum Majus*, which grows in a Husk or Pod, about the Size of a Fig; and is called *Malaguetta*, or Grains of Paradiſe. 2. *Cardamomum Medium Matthiol.* This Kind, as well as the former, are little uſed in Phyſick. 3. *Cardamomum Vulgare Officin. Minus Matthiol. & Bontii* This Kind is much uſed, the Seed being commonly firſt ſeparated from the Husk. It is attenuating and cordial, and enters into many Compoſitions of theſe Kinds. It is uſed by the *Indians* to ſeaſon their Food. The *Chineſe* have a 4th Sort, which they uſe in the ſame manner as the *Indians* do the third.

13. *Carpobalſamum Officin.*

This is the Fruit of the *Xylobalſamum* mentioned in the third Section. It is nearly of the ſame Size with Cubebs, and is aromatick, cordial, ſtomachick, *&c.* The Juice of this Tree is termed *Opobalſamum*.

14. *Caryophilli Aromatici.* Cloves.

Cloves are the Foot-ſtalks or *Calices* of the Flowers of the Clove-tree, pluck'd before they are full blown. The Fruit which ſucceeds theſe Flowers, when ſuffer'd to ripen, are in ſome Diſpenſatories termed *Autophylli*; and the *Hollanders* preſerve them with Sugar. Cloves kept in a Cellar or any other damp Place, will increaſe very much in Bulk and Weight. They contain a great Quantity of Eſſential Oil, and are heating to a very great degree; they ought therefore to be uſed ſparingly.

15. *Caſſia Fiſtula, ſeu Solutiva Officin.*

The *Arabians* firſt imploy'd *Caſſia* in Phyſick; for neither the *Greeks* nor *Romans* ſeem to have known it. There are at preſent three ſorts of *Caſſia*. (1.) *Caſſia Alexandrina, ſive Orientalis*, which is the beſt of all, and therefore commonly order'd in Preſcriptions; but being very rare, the ſecond ſort, or the *Caſſia Americana* is generally ſubſtituted for it. This kind is more diſagreeable, more acrid and griping than the former; but as it was tranſplanted from the *Levant* into the *American* Iſlands, it ought not properly to be reckon'd a different kind. The third kind is the *Caſſia Braſilienſis Purgatrix*. This, while green, is aſtringent, but when ripe, purges more than either of the other ſorts; and M. *Tournefort* obſerves, that its purgative Quality, compared with the *Alexandrian Caſſia*, is as two to one. It is likewiſe much larger, and the Pulp much more acrid.

Caſſia is a good and mild Cathartick, eſpecially when Purging is on any account judged neceſſary, where the Patient is threatned with an Inflammation, either in the Thorax or Abdomen; becauſe it abates the Acrimony of the Fluids. It is charg'd with operating ſlowly, and generating Wind; but both theſe

theſe Inconveniencies may be prevented by giving it in Decoction; and when taken in this manner, it is not hurtful even to Hypochondriacks. It is often mix'd with Tamarinds and Manna very properly. The Doſe in Subſtance is from half an Ounce to an Ounce and an half; and in Decoction from two to four Ounces. When given in the Quantity of one Drachm in the Evening, it juſt keeps the Body open. It is often join'd with Emetick Tartar, to moderate the Effects of that Vomit. In fine, it is a proper Purge in all inflammatory Caſes; which cannot be ſaid of any other known Cathartick.

16. *Cocci Orientales*, *Cocculæ Officinar.*

This is a Fruit almoſt round, of a dark Colour, brought from the *Levant* and the Coaſt of *Malabar*, and belonging to a Tree named *Solanum Racemoſum.* Taken inwardly, even in the Quantity of four Grains, it cauſes Hickups, Nauſea's and Faintings, and in a greater Doſe, is poiſonous. The Powder of it ſprinkled on the Head, kills Vermin, and when made up into a Paſte with common Flower and new Cheeſe, it will intoxicate Fiſh, ſo that they may be catch'd with the Hand. Some Perſons are afraid of eating ſuch Fiſh; but Experience has proved that their Apprehenſions are without Foundation.

17. *Colocynthis Officin.* Coloquintida.

Coloquintida is brought from ſeveral Places of the *Levant*, and particularly from the Iſland of *Crete.* The Pulp of this Apple is very bitter and purgative, but the Seeds have neither of theſe Qualities in ſo great a Degree, except they have touch'd the Pulp; for then they become very bitter. Coloquintida taken in a large Doſe, is one of the moſt violent Purges now known. It not only often brings away pure Blood, but alſo produces violent

Cholicks, Convulſions, Ulcers in the Inteſtines and fatal Hypercatharſes. When the Pulp is taken in Subſtance, it ſticks to the Coats of the Stomach and Inteſtines; and therefore it has been judged convenient to divide it as much as is poſſible. Thus having firſt reduc'd it to a fine Powder, it is made up into Lozenges called *Trochiſci Alhandal*; but even theſe are hurtful to Perſons of weak abdominal Viſcera. When it is thought proper to give it in Clyſters, it ought to be boil'd in a linnen Rag, that no large Pieces of the Pulp may mix with the Decoction. Theſe Clyſters are often ordered in Apoplectick Caſes. Some ſay that Coloquintida will purge Children, by being reduced to a Paſte with Ox Gall, and applied to the Navel.

18. *Cubebæ Officin.* Cubebs.

We do not know the Plant which produces this Fruit. They are brought from the Iſland of *Java*, and other Parts of the *Eaſt Indies*. They are round, like Pepper, of a greyiſh Colour, and aromatick Taſte. They are recommended in a Hoarſneſs and Loſs of Voice, eſpecially when the Tonſils are ſtuffed and obſtructed. The Doſe is from ten to twenty-four Grains in Subſtance, to be chewed; or from a Drachm to a Drachm and an half in Infuſion.

19. *Folliculi Sennæ.*

Theſe are the Fruit of the Senna Tree, and purge in a leſs Degree than the Leaves. The common Doſe is from three to ſix Drachms in Infuſion or Decoction.

20. *Myrobalani.*

There are five kinds of Myrobalans, termed *Citrinæ*, *Chebulæ*, *Belliricæ*, *Emblicæ*, and *Indæ*. The yellow are the moſt valuable, and moſt in uſe. They purge gently, and ſtrengthen the Inteſtines at the

ſame

ſame time; and therefore are very proper in Diarrheas and Dyſenteries, and make a good Succedaneum for Rhubarb, only the Doſe muſt be larger; and they may likewiſe be very conveniently mix'd with Rhubarb.

21. *Nux Moſchata.* Nutmeg.

Nutmegs are of two ſorts;

1. *Nux Moſchata ſubrotunda, ſive Nux Myriſtica Cluſii, ſive Nux Moſchata Fœmina.* This kind is the beſt, and moſt commonly uſed. The whole Fruit is much of the Size and Figure of our Peaches; but the Pulp is cloſer. The Kernels yield a fine Oil by Expreſſion, and the Film or Coat by which it is immediately incloſed, is the Mace. Both Nutmeg and Mace are ſtrengthening, cephalick, ſtomachick, cordial, *&c.* They help Digeſtion, take away ſtinking Breaths, reſiſt Corruption, *&c.*

2. *Nux Myriſtica Mas, ſive oblonga*, C. B. P. This kind reſembles the former in Colour and Conſiſtence; but it has but little Smell or Taſte, and is of an oblong Figure. Both Kinds are imported by the *Dutch*, chiefly from the Iſland *Banda.* It is a common Practice in *France*, to carry a Piece of Allum and a male Nutmeg together, in a Satin Bag, hung about the Neck, as a Preſervative againſt the Gout and Coſtiveneſs.

22. *Nux Vomica.*

This is a flat, roundiſh Fruit, cover'd with a thin ſilver-colour'd Skin, which incloſes a hard Kernel. The Tree that bears this Nut, grows in the Iſland of *Ceilon*, and along the Coaſt of *Malabar*, being named *Caniram Hort. Malebarici*, and *Malus Malabarica fructu orbiculato*, &c. *Raji Hiſt.* The Wood of this Tree is the *Lignum Colubrinum*, mentioned above. The Fruit is of a bitter Taſte, and is a Poiſon for Brutes, ſuch as Dogs, Cats, *&c.* Some pretend

tend that it does not poison Men, but this is not to be depended on. It is probable that its poisonous Quality is owing to its great Bitterness, which makes an insupportable Impression on the Nervous System; and accordingly we find that all bitter Drugs are Poisons for some kind of Animals. Thus bitter Almonds kill Birds, *&c.*

23. *Nux Vomica legitima. Faba Sancti Ignatii. Faba Purgatrix.*

This is the Fruit of a Tree that grows in the *Philippine* Islands. Its Substance is like Horn, and its Taste very bitter. It is described by Father *Camilli*, in the Philosophical Transactions. The *Indians* of the Island of *Lucon* look upon it as an universal Remedy; but it is too rough a Purge for the *Europeans*; for tho' it often carries off Fevers, yet it causes Convulsions and other Disorders, and therefore ought never to be given to those who have weak Bowels. It may be given in Powder from ten Grains to a Scruple, in a Glass of Wine, or of any simple cordial Water; and then it commonly operates by Sweat, and thus cures intermitting Fevers, *&c.* The Dose may be repeated ten or twelve times.

24. *Piper Indicum.* Pepper.

The ripe fresh Fruit is about the Size of a large Currant, or small Gooseberry, and of a red Colour, which in drying turns to black. The common White Pepper is only the Black stripp'd of its outer Skin. This is done by first steeping it in Sea Water, then drying it, and rubbing it in Sand. There is however another kind of Pepper, which is naturally white, but which in all other respects is like the black.

Pepper is very good in Indigestions, a few Corns being swallowed before Meals; and it very often has

has been found to keep the Body open, in thoſe who were otherwiſe coſtive, when taken in this manner.

25. *Piper Longum. Macro-Piper.* Long Pepper.

This is the Fruit of a Tree which grows on the Coaſt of *Bengal*. It has the ſame Qualities with common Pepper, but is not ſo pungent.

26. *Piper Jamaicenſe. Jamaica* Pepper.

The Tree that bears this Fruit, grows in *Jamaica*. The Grains or Berries are about the Size of Juniper Berries, and of an Aromatick Taſte, which partaking of that of all the other Spices, it has by the *Engliſh* been called *All-Spice*. It is uſed to ſeaſon Food, and is eſteemed good for the Scurvy. The Eſſential Oil drawn from it is very much valued.

27. *Piper Æthiopicum Officin. ſiliquoſum*, J. B. *Nigrum oblongum*, J. B.

The Negroes uſe this in the room of common Pepper.

28. *Ricini Americani majoris Grana.*

Theſe Seeds are diſtinguiſh'd from the *Grana Telli*, by a ſmall black Speck at one End, which the others have not. They purge violently; but if the Skin, with which they are cover'd, be carefully taken off, they loſe their purgative Quality, and may be eaten with Safety. From not knowing this Secret, new Comers into *America* are often catch'd by the Natives. Theſe Seeds are an Ingredient in the *Pilulæ Magiſtrales* of *Rotrou*, which are eſteemed in Scrophulous Caſes.

29. *Ricini Americani minoris Grana. Avellana Purgatrix Riverii.*

This is a much more mild Cathartick than the former, and that Quality reſides intirely in the Skins;

Skins; for when these are taken off, the Seeds may be freely eaten. An Oil drawn from this Fruit is said to purge Children, by being rubb'd on their Navels, and thereby to kill Worms.

30. *Telli Grana, seu Tellia Officin.*

This is a very violent Purgative, both upward and downward, in so small a Quantity as two Grains; and therefore it is seldom used in *Europe*. The Cathartick Quality is said by *Herman* to reside in the Pellicle that separates the two Lobes.

31. *Ricini vulgaris Grana, seu Grana Palmæ Christi Kiki.*

These Seeds are much less purgative than the former Sorts. Ten or twelve Grains will only purge gently. The *Oleum Ricinum*, a great Resolvent, and recommended in Rheumatisms, is drawn from them. This Oil is likewise used in many Cutaneous Diseases.

32. *Staphidis Agriæ semen.* Staves-acre.

These Seeds are triangular, blackish on the Outside, white within, and of a bitter Taste. They purge strongly, taken in the Quantity of twelve or fifteen Grains, and they are likewise recommended to kill Vermin.

33. *Semen Zina, Semen Cinæ, Semen sanctum, Semen Zedoariæ, Semen contra vermes, Semen Santonicum*, &c. Worm-Seed.

Lippi names the Plant that bears these Seeds, *Abſynthium breve Santonicum, Memphiticum*, &c. *Tavernier* and *Kæmpfer* say, they come from the Kingdom of *Boutan* in *Asia*; and *Kæmpfer* has related the manner in which they are gathered. The Taste of them is bitter; they cut the thick Phlegm lodged in the Stomach,

Stomach, and are excellent againſt Worms; but even in theſe Intentions, Rhubarb is better.

34. *Tamarindi Officin.* Tamarinds.

This is the blackiſh Pulp of a Pod, ſomething like common Beans. The Pulp lies between two Huſks or Shells; one of which is woody, the other tough and membranous. The Tree which bears this Fruit, grows in *Ægypt* and in both *Indies*, and is deſcribed by *Tournefort*, in the *Memoirs of the Royal Academy* of 1699. We owe the Knowledge of this Purgative to the *Arabians*; for neither *Greeks* nor *Romans* knew any thing of it. The Doſe in Subſtance is from an Ounce to an Ounce and half; and three or four Ounces in Decoction. Some Phyſicians order a Tamarind Whey, *Serum Lactis Tamarindinatum*, as a gentle Purge in inflammatory Diſpoſitions, Cholicks, *&c.* and Tamarinds are very properly mix'd with Caſſia. They may likewiſe be given as an Alterative, in the Quantity of half an Ounce; and they are very proper to be mix'd with Ptiſanes, and other Liquors, given to quench Thirſt in Acute Diſtempers.

SECT. VI.

Juices.

THE Juices of Plants may be divided into two general Classes, Artificial and Natural. The Natural Juices are of three kinds, Resins, Gums, and Gum-Resins; and each of these again are either Solid or Liquid.

CLASS I.

Juices extracted from Plants by Art.

1. *Acacia Vera Officin.*

THIS is the Juice of a Plant named *Acacia foliis Scorpioidis Leguminosæ*, C. B. P. It is imported in Cakes of four, five, or six Ounces, which when recent are of a reddish Colour, but grow hard and black with Age. It is extremely rough and astringent, and consequently proper in Hæmorrhages, Diarrheas, Dysenteries, &c. It is given in Substance from a Scruple to a Drachm; but the *German Acacia*, or inspissated Juice of Sloes, is often substituted for it. It is also used as a Gargle to brace the salival Glands and Uvula when relaxed, and as a repellent *Collyrium* in an Ophthalmia. It is likewise used in *Egypt* to strengthen the Gums, and fasten the Teeth; and they put it into astringent Baths. It is an Ingredient in the *Theriaca*.

2. *Hy-*

2. *Hypociſtis Officin.*

This is the inſpiſſated Juice of a kind of *Orobanche* or *Paraſite* Plant, which grows on the *Ciſtus Ladanifera*. It is hard and black, tho' as it is imported it generally looks white, becauſe the Lumps are powder'd with Starch, to keep them from ſticking together. It has nearly the ſame Virtues with the *Acacia*, being ſomething more aſtringent, tho' not ſo acerb.

3. *Glycyrrhizæ ſuccus.* Liquoriſh.

This Juice is made near *Tortoſa* in *Catalonia*, and is brought to us in beautiful ſhining brittle Lumps wrapt in Bay Leaves. The way of preparing it is this;

The Liquoriſh is firſt dried and cut in ſmall pieces, then boil'd in Water. This Decoction, being firſt filtred, is evaporated to the Conſiſtence of an Extract, which is what we call its inſpiſſated Juice.

It is a good Emollient and Healer, proper in Coughs, and for promoting Expectoration, becauſe the viſcid Parts which it contains ſheath and blunt the acrid Salts. It ought to be given in ſmall Quantities, and often repeated, being otherwiſe diſagreeable to the Taſte.

4. *Aloes Officin.*

We have three kinds of Aloes, *Succotrina*, *Hepatica*, and *Caballina*; and they come from three different Plants. The firſt comes from the *Aloe Succotrina Spinoſa, anguſtifolia, flore purpureo, Breyn.* which grows in *Zocotra*, an Iſland in the Straits of *Babel-Mandel*, where they formerly prepared the Aloes by expreſſing the Leaves, and then letting the expreſſed Juice ſtand in a quiet Place, till an oily

oily Subſtance roſe at the Top. This Subſtance they took off, and evaporated it to the Conſiſtence of an Extract.

The *Hepatick Aloes* is that which is now commonly found in the Shops, being got from the Plant named *Aloe vulgaris*, C. B. P. It was termed Hepatick from the Colour, which is like that of a boil'd Liver. This is likewiſe brought from *Aſia*, according to M. *Herman*.

The *Caballine* or *Horſe Aloes* comes from a Plant named *Aloe Guineenſis* &c. *Commel.* It is brought from *Guinea* and from *Barbadoes*, and is very common in *England*. It is eaſily diſtinguiſh'd from the other kinds by its Coarſeneſs and inſupportable Smell. The Name *Caballina* was given it, becauſe it was judged to be proper only for Horſes.

The *Succotrine* and *Hepatick Aloes* are both very good Purges, but they rarify the Blood, and thereby cauſe Hæmorrhages, and other undeſigned Evacuations, to thoſe who are ſubject to them. This Medicine ought therefore never to be given to Women with Child, to thoſe who are ſubject to Piles, *&c.* Again, Aloes, after its purgative Effect is over, is conſtipating; and therefore to ſuch Perſons as are inclined to be coſtive, Caſſia is preferable. The Doſe is from four Grains to half a Drachm. The Reſinous Part extracted by Spirit of Wine, will purge violently; and the Gummy Part extracted by Water is a good Vulnerary, eſpecially in Ulcers of the Bladder and Kidneys. The Tincture of Myrrhe and Aloes is uſed to prevent Mortifications in Wounds.

5. Opium Officin.

Opium is an inſpiſſated Juice of a blackiſh brown Colour, ſometimes reddiſh, of a bitter Taſte, and a very diſagreeable Smell. The *Greeks* diſtinguiſh'd two kinds of it; one got by wounding the *Papaver album*

album Officin. the other by Expreſſion. The Opium which we have is of the firſt kind; and as it was cultivated formerly in *Egypt* near the City of *Thebes*, it has got the Name of *Opium Thebaicum*. If we may believe *Kæmpfer*, all the Opium now uſed in the Eaſt is what tranſudes ſpontaneouſly from the Plants in *Natolia* and other Places. But M. *Tournefort* and ſeveral other modern Travellers could find no ſuch Opium among the *Turks*; all that they met with being the ſame with what is brought to us in ſoft Lumps. They likewiſe obſerve that the ſober People among the *Turks* ſeldom take above a Drachm in a Day; and a few Grains of that Quantity is always mix'd in their Coffee. In the Empire of the Great Mogul, Opium is ſold as commonly in the Shops as Tobacco with us. The Inhabitants prepare it in different Manners, and mix it with different Ingredients, ſuch as Rhubarb, the Extract of Rhubarb, and the like. Some add to it other Narcotick Subſtances, ſuch as the *Datura*. This laſt is generally the Artifice of Quacks, by which they who take this Mixture, are thrown into pleaſing Dreams, which they take for Extaſies, and believe to be real. *Kæmpfer* relates many wonderful Effects of this Preparation, which he terms, *The Indian Nepenthe*.

The Effects of Opium are always Narcotick, whether taken inwardly, or applied externally; and it has been found to cauſe Sleep when given in a Clyſter, better than when taken by the Mouth. When applied to the Eyes and Ears, it has cauſed Blindneſs and Deafneſs; and *Galen* relates that an Opium Plaiſter laid on a Gladiator's Head by a Stratagem of his Enemy, kill'd him in a little time afterwards. This Author likewiſe ſays, that he never uſed Opium, except in very preſſing Caſes. Opium does not make the Pulſe quicker or harder than it was before, but only greater, and heats very much; which is a ſure Proof, that it diſſolves and rarifies

the Blood; and this appears likewiſe from its cauſing an Itching in the Skin, and ſometimes Sweat. It is obſerved of the *Turks*, who are kill'd in Battle, that as ſoon as their dead Bodies are moved from the Places where they fall, they begin to bleed, their Blood being made more fluid by the Opium which they take. By this Rarefaction of the Blood in the Veſſels, the Nerves, which lie near theſe Veſſels, are compreſs'd; and thus the Courſe of the Animal Spirits is ſtopp'd, as is likewiſe the Secretion of many Fluids, ſuch as the Bile and Urine, which occaſion Coſtiveneſs, and the making of very little Water. Opium, in all probability, acts by its Narcotick Sulphur, which divides and rarifies in an extraordinary manner the ſulphurous Parts of the Blood; and accordingly we obſerve all Vegetables which contain an Oil of this kind, ſuch as Nutmeg, Saffron, *&c.* produce in the Body an Effect of the ſame nature with that of Opium. Neither is it at all unfeaſible, that Sulphurs ſhould be capable of a very great degree of Rarefaction, ſince the Smell of Muſk or Ambergris may extend through ſo large a Space. *Pitcairn* was of opinion, that the Effects of Opium were owing to its volatile Salt; but it ſeems to contain that Principle in too ſmall a Quantity for ſuch Operations.

When a Perſon has taken too great a Quantity of Opium, the firſt thing to be done is, to empty the Veſſels by copious Bleeding, if the Patient's Strength can bear it. The next thing is to drink acid Liquors, ſuch as Vinegar, Lemonade, Syrup of Barberries, and ſuch like, which coagulate the Blood, and thus give the Veſſels room to contract. Smelling to Vinegar and all Aromaticks, is likewiſe proper; and if the Stupor be very great, Scarifications ought to be made, and Vinegar and Salt ſprinkled upon the ſcarified Parts. Bliſters and ſharp Clyſters anſwer the ſame Effect.

The

The Rules to be obſerv'd in taking Opium, are theſe;

1. If the Patient be Plethorick, he ought not to take Opium, till he has loſt ſome Blood.

2. It ought not to be given in the Time of the Menſes, Lochia, *&c.* of Women, nor during the uſual Flux of the Hemorrhoids in Men, becauſe it ſtops all theſe natural and healthful Evacuations. Neither ought Opium to be given in every Diarrhæa, becauſe if it be critical, the Stoppage thereof may be very hurtful. It muſt likewiſe be very improper in a Suppreſſion of Urine; and the general Rule is, that when the Suppreſſion of any one Evacuation by Opium is foreſeen, other Evacuations, eſpecially by Bleeding, ought to ſucceed.

3. Opium ought never to be taken on a full Stomach, becauſe it hinders Digeſtion, and proves commonly emetick. The Digeſtion ought therefore to be compleated at the time of taking it; and the ſame thing is to be ſaid of all other Narcoticks, which given unſeaſonably and for a long Continuance of Time, quite deſtroy the Appetite, bring on Hickups, Nauſeas, and habitual Vomitings.

4. Perſons who begin to take Opium, ought to venture only on a very ſmall Quantity at firſt, becauſe the Effects of the ſame Quantity on different Perſons are very different; and there is no way to determine but by Experience how much any Perſon can bear. Half a Grain has been found to cauſe Sleep for twenty-four Hours together, to a Perſon who afterwards required half a Drachm to produce half that Effect. For it is a certain Obſervation, that they who accuſtom themſelves to take Opium habitually, muſt often increaſe the Doſe, otherwiſe it gradually loſes its Effect on them; and M. *Geoffroy* knew a Woman who took ſeventy-two Grains every day, meerly to eaſe the Pain of a cancerous Breaſt. The common Quantity among the *Turks*

is a Drachm in a Day; but ſome among them take a much greater Quantity.

The Ancients were extremely cautious in giving Opium; but in the beginning of the laſt Century *Felix Platerus*, a learned Phyſician of *Baſle* in *Switzerland*, began to bring the Uſe of it into Vogue. *Silvius de le Boe*, Profeſſor of Phyſick at *Leyden*, perfected what *Platerus* began; and from that Time many of the moſt famous Phyſicians in *Europe*, ſuch as *Sydenham* and others, found by certain Experience that it was one of the moſt valuable Medicines in the World, when prudently adminiſtred, in calming the too violent Motion of the Blood, eaſing Pain, *&c.*

There are however ſtill ſome very great Men, who continue Enemies to Opium, and among theſe M. *Stahl* has declar'd himſelf, in his Diſſertation *De Impoſturis Opii*. They are afraid to uſe it for the ends juſt mentioned, for fear of ſuſpending the Criſes which commonly happen after violent Pains, ſuch as thoſe of the Gout and Rheumatiſm, and in acute Diſtempers, in which the Fluids are violently agitated; they apprehend, that by giving Opium to diminiſh theſe Motions, they only throw a Veil over the Diſtemper, which hinders them from obſerving its true Genius, and the Tendency of Nature in the Courſe of it. Of this they cite Pleuriſies as an Example, and they are certainly in the right not to give Opium in that Diſeaſe.

But notwithſtanding all the Strength of theſe and other Reaſons againſt the Uſe of Opium, and the Authority of thoſe who advance them; this Medicine is undoubtedly very proper on many Occaſions, as in great want of Sleep, too great Motion of the Fluids, occaſion'd by purgative and other Kinds of Medicines, in great Defluxions, ſtubborn Coughs, *&c.*

6. *Saccharum Offic.* Sugar.

Sugar is the Eſſential Salt of the *Arundo Sacchariſera*, or Sugar Cane; the different Kinds of which are theſe,

Muſcovado, the firſt Sugar, got from the Juice of the Canes.

Caſſonado, Sugar refined from the former by the Whites of Eggs, Lime-water, *&c.* which being more oily than the more refined ſorts, is to be preferred for all inward Uſes. It is likewiſe moſt proper for Confectioners, becauſe it does not candy ſo eaſily.

Loaf Sugar, *Caſſonado* ſtill further refined and clarified in different degrees. It has the ſame Qualities with the former, but in a leſs degree for inward Uſe. They both cut Phlegm, promote Expectoration, and animate the Blood; but they excite Vapours and the Tooth-ach. They who uſe much Sugar, are liable to Fevers and to rotten Teeth. In *Braſil*, the Skimmings of Sugar are given to the Hogs, by which they are ſoon fatten'd, and their Fleſh becomes very delicate.

Sugar Candy, or Cryſtals of Sugar, is of three kinds, white, yellow, and red; which are only the three former ſorts, boil'd to a due Conſiſtence. White Sugar Candy comes from the Loaf Sugar; yellow from the *Caſſonado*, and red from the *Muſcovado*. Sugar Candy is moſt proper in Colds, becauſe it melts ſlowly, and thereby gives time to the Saliva to mix with it, and thus to blunt the Acrimony of the Phlegm.

Red Sugar. This was uſed very much formerly in Looſneſſes; but at preſent Oil of ſweet Almonds and other Things of that kind are ſubſtituted for it.

Syrup of Sugar, or *Moloſſes*, is the glutinous Part which drains from Sugar, and was formerly uſed for the red Preſerves or Sweet-meats; but it gave them

a diſagreeable burnt Taſte. In the *Weſt-Indies* they ferment and diſtil it; but the Brandy or Spirit which it yields is unpleaſant and very intoxicating. A much better Spirit might be made of refined Sugar.

To theſe we may add the *Saccharum Acernum*, Maple-Sugar; which is the Product of *Canada* and *New England*, in which Countries the Natives collect the Juice that runs from a kind of Maple-trees, by Inciſion, and then evaporate that Juice to the Conſiſtence of Sugar, which while it remains unctuous, is better for internal Uſe than any other kind; and the famous *Syrup of Maidenhair of Candia* is made with it. As it is brought to us, it is of a greyiſh Colour, and taſtes like other Sugar. With this Sugar the Inhabitants of theſe Countries prepare likewiſe a ſort of Liquor which is their common Drink; and likewiſe make Brandy and Vinegar from it.

7. *Tartarus vel Tartarum Offic.* Tartar.

Tartar conſiſts of the acid, oily, and earthy Parts of Wine; and the Lees of Wine are Tartar attenuated and divided into Wine by Fermentation. Tartar may therefore be called the Eſſential Salt of Wine. *White Tartar* contains the greateſt Proportion of Acid, and *Red Tartar* moſt Oil and Earth.

Under this Head may be reckon'd

1. *Cineres Clavellati*, Pot-aſh; one kind of which conſiſts of the earthy Part of the Lees of Wine, burnt to Aſhes, which by melting afford a Salt like Salt of Tartar.

2. *Kali*, *Soda*. This *Soda* is made by calcining different Plants. In hot Countries they chuſe the *Kali majus cochleato ſemine*, C. B. P. and at *Alicant*, the *Kali Hiſpanicum ſupinum*, *foliis brevibus*, Dn. de Juſſieu. It contains a ſmall Portion of Salt, like Sea Salt, mix'd in a great Quantity of Alcaline Salt;

and

and Cryſtals may be obtain'd from it in Cubes like Sea Salt.

3. *Fel Vitri*, *Sal ſeu Axungia Vitri.* This is the Sea Salt of the *Soda*, which is eaſily ſoluble in Water; and of this Solution the Farmers make a Waſh for Horſes Eyes.

8. *Heliotropium.* Turnſol.

We have two kinds of this Juice, one in Lumps, the other in Rags. The Plant which produces it grows in *Languedoc*, and is a kind of *Ricinoides*, called by *C. Bauhin Heliotropium Tricoccum.* The Juice being expreſs'd, linnen Rags are impregnated with it, and then expoſed to the Vapour of Urine, which gives them a red Colour. Theſe Rags are exported to *Holland*, where they extract the Lumps from them by a Method, which is hitherto a Secret. It is probable however that they are a kind of *Fæcula.* The Tincture of *Heliotropium* or Turnſol ſerves in Chemiſtry, to try Acids and Alcalis, but is not uſed in Phyſick. There is a third ſort of Turnſol brought from *Portugal*, which is uſed by the Scarlet Dyers.

9. *Indigo.*

This Juice is brought both from the *Eaſt* and *Weſt-Indies*, made up in different Forms. The moſt eſteem'd is that of *Guatimala*; which is the *Fæcula* of a Plant termed *Emerus Americanus ſiliqua incurva*, J. R. H. Some Phyſicians have recommended Indigo in the Jaundice, taken in the Quantity of a Drachm; but others look upon it as a Poiſon, and in *Saxony* the internal Uſe of it is prohibited.

10. *Alciot ſive Uruba Indorum.*

This Juice is got from two different Plants; the firſt is named *Mitella maxima tinctoria*, J. R. H. and *Orleana foliis capaceis*, H. L. Bat. The other is a

Shrub of the ſame Name with the Juice. From theſe two Plants infuſed and long macerated the Juice is obtained in form of an Extract. The *Indians* uſe it to paint their Bodies red, and the *Spaniards* uſe it in dying; and formerly it was mixed with their Chocolate.

11. *Amylum Offic.* Starch.

This is the *Fæcula* of Wheat, which is firſt ſteep'd in Water till it ſwells, and then bruiſed in the ſame Water by Mens Feet. Then they paſs the whole thro' a Searce, and the ſtrain'd Liquor being evaporated, a *Fæcula* is left at the Bottom, which being dry'd is Starch; and when thus made, it may be uſed inwardly in Diſeaſes of the Breaſt, and applied to the Eyes. But when made, as it often is, with Bran, mix'd with Nitre and Alum Water and Vinegar, it ought not to be uſed inwardly.

12. *Terra Japonica.*

We have one kind of *Terra Japonica* from *Malabar*, and another from *Pegu*. The Manner of preparing it is this.

> *The* Areca *Nuts, before they are quite ripe, are bruiſed, and a ſtrong Decoction made of them. This Decoction pour'd off by Inclination, having ſtood for ſome time, is mix'd with the Powder of calcined Shells, and then depoſites a* Fæcula.

Another Decoction and *Fæcula* is made of a Plant called *Catechu*; and theſe two *Fæculæ* mix'd make the ſimple *Terra Japonica*. In *Spain*, it is prepared with Aromaticks, which makes it very heating; which it is not of it ſelf, and therefore the ſimple Kind is to be preferred for all Phyſical Uſes. It is a mucilaginous, aſtringent Subſtance, very proper in Inflammations and Swellings of the Tonſils, *&c.* It ſtrenghtens

ſtrengthens the Stomach and helps Digeſtion, and is very proper in Looſeneſſes. The Doſe is from half a Scruple to fifteen Grains, repeated ſeveral times a Day. Half a Drachm boil'd in a large Quantity of Water makes likewiſe a very proper Drink in a Diarrhæa or Lientery, even when other Medicines have failed.

13. *Sago.*

This is a Paſte in ſmall Grains, or a kind of *Vermicelli*, prepared from a Tree named *Arbor palmam referens farinifera*, C. B. P. The Pith of theſe Trees being well beat in a Mortar with Water, forms an Emulſion, the *Fæcula* of which dried is Sago. It is a very kindly and nouriſhing Food, never fermenting in the Stomach, and very proper in Hectick Fevers. It is very much uſed in *England*.

14. *Cacavi Monaid. Manihot Thevet.* Caſſada.

The Plant of which *Caſſada* is the Root is a kind of *Ricinoides*, and not a *Juca*, as almoſt all Authors pretend. This Root, eaten freſh and with all its Juice, is a certain Poiſon; but when dry, it may be ſafely eaten. In the *Weſt-Indies* they raſp this Root; and having ſqueezed out the Juice from the Meal, they make it into a Paſte, and then into thin Cakes, which they bake partly in the Sun, and partly over a Fire; and theſe Cakes are the common Bread of the Country. The *Indians* ferment the Juice, and then make it into Vinegar, which becomes very harmleſs, tho' poiſonous before Fermentation.

SECT.

SECT. VI.

CLASS II.

Juices which flow from Vegetables naturally.

THESE Juices, as has been already ſaid, are of three Kinds, Reſins, Gums, and Gum-Reſins.

Reſins, are inflammable Subſtances, ſoluble in Spirit of Wine, but not in Water.

Gums diſſolve in Water, but not in Spirit of Wine, and when burnt, the greateſt Part of them turns to a Coal.

Gum-Reſins are Subſtances, of which one Part is ſoluble in Water, and the other in Spirit of Wine.

Each kind is diviſible into Liquid and concreted Juices.

ART. I.

Liquid Reſinous Juices flowing from the Bark of Trees.

1. *Balſamum Judaicum, Syriacum, Hieruchuntinum, Conſtantinopolitanum, e Mecha*, &c. *Opobalſamum Officin.*

THIS is a reſinous Liquor, which at firſt is of the Conſiſtence of Oil of ſweet Almonds, but by Age becomes like Turpentine, loſes much of its Smell, and grows ſometimes blackiſh. When freſh, it is of a very agreeable aromatick Smell, and of a Taſte like Citron Peel. The Plant, from which it flows,

flows, is called *Balſamum Syriacum folio Rutæ*, C.B.P. *M. Lippi*, ſent by *Lewis* the 14th Ambaſſador to the Emperor of the *Abyſſines*, being in *Egypt*, was at great pains to diſcover this Plant, and the ways of procuring the Balſam from it. The Subſtance of what he could find out is, that there are three Ways of collecting it, and that there is ſome Difference in the Liquors collected each way. The firſt runs of it ſelf from the Tree; the ſecond, by Inciſions; and the third is got by boiling the Tops of the Trees. The Balſam, that riſes firſt after a gentle Decoction, is very good and much eſteemed; but what is got afterwards, is the coarſeſt ſort, and of leaſt Value. The firſt kind of Balſam is ſent entirely to the Seraglio of the Grand Seignior; the other ſorts are ſuffer'd to be exported. This Balſam is not now to be found in *Judea*, which was its ancient native Soil, and where it was very common before the Deſtruction of *Jeruſalem*; but ſoon after that, the *Jews* deſtroyed all their Trees, leſt the *Romans* ſhould have made Advantage of them. At preſent it is found near *Mecca* and *Grand Cairo* in *Egypt*, from whence it is carried to *Conſtantinople*, where it is in great eſteem. In *Aſia* it is given in the Quantity of two Scruples, as a Diaphoretick in malignant Fevers; and it is undoubtedly an excellent Medicine for deterging Ulcers in the Lungs, Kidneys and Bladder, and even for diſſolving pulmonary Concretions. But the Uſe of it ought to be avoided in inflammatory Diſpoſitions of theſe Parts, even though ulcerated. It ought likewiſe never to be given when there is an Eryſipelas in any Part of the Body whatever. It is uſed with good Succeſs in Gonorrhea's and the *Fluor Albus*; being given from ten to twelve Drops early in the Morning faſting, the Patient's Body having been well prepared, and the Running having continued ſome time. It is uſed externally in Wounds without Contuſion, as a Detergent.

The

The Ladies in *Aſia* uſe it as a Coſmetick, and eſpecially in the Seraglio of the Grand Seignior. In *France* the Ladies formerly prepared a kind of *Lac Virginale* with the yellow Balſam of *Mecca*, diſſolved in Spirit of Wine; but they were ſoon tired of this Method, becauſe it leaves a Cruſt on the Face. The true Manner of preparing this Coſmetick, is as follows;

Take Balſam of Mecca, *and Oil of Sweet Almonds, of each equal Parts. Mix them well together into a kind of* Nutritum. *On three Drachms of this* Nutritum *in a Matraſs pour ſix or ſeven Ounces of Spirit of Wine, and leave them in Digeſtion, till a ſufficient Tincture is extracted. Then ſeparate this Tincture from the Oil, and pour about an Ounce of it into eight Ounces of the* Aqua Fabarum, *or any other Water of the ſame kind.*

This Mixture is a *Lac Virginale*, which will anſwer all the Intentions of a Coſmetick without any Inconveniency. The Balſam of *Mecca* is an Ingredient in the *Theriaca* and *Mithridate*.

2. *Balſamum Copaiba.* Balſam of *Capivi.*

When this Balſam is new, it is of the ſame Colour and Conſiſtence with Oil of Sweet Almonds, and ſmells like the *Calambour* Wood; but the Taſte is a little acrid and bitter. It is brought from *Braſil* by the *Portugueze*, and is the Product of a Tree called *Copayva*, *Piſon.* being got in three different manners, as the former. The firſt Kind is the beſt and cleareſt; and this Balſam is at preſent very much in uſe, being given in the ſame Caſes with that of *Mecca*, and with the ſame Reſtrictions, only the Doſe may be made ſomething larger. *Fuller* ſays, that when given in the Quantity of two Drachms, it purges very well, and gives a very bitter

bitter Taste to the Urine. A Liniment may be made with two Parts of Spirit of Wine, and one Part of this Balsam, very proper to be used in Rheumatisms, Palsies, &c.

3. *Balsamum Peruvianum.* Balsam of *Peru.*

We have two kinds of this Balsam, one red, the other whitish. This last is brought us in Shells; and, when fresh, has an agreeable Smell like *Benjamin*, is very liquid, and of a yellowish white Colour. It flows by Incision from a *Mexican* Tree named *Arbor Balsamifera*, *Hernand.* The other kind is of a much browner Colour, and sometimes smells of Smoak; being procured by boiling the Bark and Tops of the same Tree, the Balsam swimming at the top. This Balsam is recommended for the same Uses with the two former, but the Balsam of *Capivi* is more in vogue.

4. *Balsamum Tolutanum.* Balsam of *Tolu.*

This Balsam is of a solid Consistence, and is likewise imported in Shells. It is of a yellow Colour, transparent, and of an agreeable Smell, especially when burnt. Being held in the Mouth, it has no Acrimony, in which it differs from all the rest; and for that reason it is preferred in *England* for internal Use, being given from six to eight Grains. It has its Name from the *American* Province where it grows, which lies between *Carthagena* and *Nombre de Dios.*

5. *Liquidambar Offic.*

There were formerly two kinds of this Juice, one resinous, of a yellow Colour, and a Smell like *Storax* or Ambergrease; the other thicker, and not so fine. They were much used in Perfumes, but at pre-

preſent are unknown, tho' ſome believe that they come from a Tree named *Acer Virginianum*, *Herman.*

6. *Styrax Liquidus.* Liquid Storax.

There are two kinds of *Storax* in the Shops; the one is of the Conſiſtence of Oil of Sweet Almonds, of a very pleaſant Smell. This is the true Liquid *Storax.* The other ſeems to be a Compoſition of the firſt Kind, mix'd with ſomething elſe. It is of a more ſolid Conſiſtence, and is by ſome Authors ſaid to be wholly factitious, tho' it is moſt commonly uſed. The Tree which yields the Liquid *Storax*, grows in the Plains of the *Red Sea*, being call'd by the *Arabians Mio* or *Roſa Mallos.* The Bark of this Tree is boiled in Sea Water, and the *Styrax* riſes to the Surface of the Decoction, ſuch as it imported. It is an excellent external Remedy in Wounds threatened with a Mortification; and in this Intention chiefly it enters into ſeveral Ointments and Plaiſters. The *Turks* uſe it as a Perfume.

7. *Terebinthina Offic.* Turpentine.

The Name of Turpentine has been given to all the Reſinous Juices of four different Trees, and conſequently is of four kinds.

The firſt comes from the *Terebinthus Vulgaris* C. B. P. This, called the *Terebinthina de Chio*, or *Cypria*, is of the Conſiſtence of Honey, of a very pleaſant reſinous Smell, and the beſt of all Turpentines for internal Uſe. It gives a violet Smell to the Urine, even when given in a Glyſter. It is an excellent Diuretick, and very proper in Ulcers of the Kidneys, Bladder, and Uterus. In Gonorrhæas, it is commonly made into a Bolus with prepared Crabs-Eyes, or any other Abſorbent. It may likewiſe be taken in the Yolk of an Egg, from half a Drachm to a Drachm. All theſe Precautions are neceſ-

neceſſary only to ſhun the diſagreeable Taſte, and Sugar and powdered Liquoriſh may be uſed for the ſame Purpoſe. It is likewiſe often given in Glyſters, being firſt diſſolved in the Yolk of an Egg, and then mixed with the Decoctions. It is thus adminiſtred in Stone Cholicks, but the Inteſtines ought previouſly to be unloaded by purgative Glyſters. The Doſe, in this Manner, is from an Ounce to an Ounce and an half. Turpentine, like all other Balſams, is to be avoided in inflammatory Diſpoſitions of all Kinds.

The ſecond Sort is the *Terebinthina Veneta*, *Venice* Turpentine, which comes from the Larch Tree, or *Larix folio deciduo* C. B. P. This Tree grows on the Alps and in the *Tirol*. The *Venice* Turpentine is of a Whitiſh Colour, with a Caſt of Green. The Taſte of it is ſharper, and the Smell ſtronger than of the former Sort; but it is much more commonly uſed in theſe Countries, becauſe the other is difficult to be got. It has the ſame Virtues, but is not altogether ſo proper for internal Uſe. From this Turpentine *Colophony* is made, being nothing but the *Caput mortuum*, remaining after Diſtillation.

The third Kind, called *Terebinthina Argentoratenſis*, *Straſburgh* Turpentine, is got from Fir-trees. It is very much uſed in *Germany*, but though its Virtues be equal to that of *Venice*, the Taſte is more acrid and unpleaſant.

The fourth, called *Common Turpentine*, is got from Pine-trees. It is not uſed in Medicine; but is many other ways uſeful in Life, becauſe from it are made the common Sorts of Reſin, Pitch, Tar, *&c.* Theſe are,

1. *Reſina Pini Alba*, White Reſin, which turning yellow or reddiſh, is termed *Reſina Pini Fuſca*, or *Thus fœmina Offic.*

2. *Pa-*

2. *Palimpiſſa*, the black, or burnt Pitch.

3. *Zopiſſa*, Pitch pick'd off from the Veſſels.

4. *Pix Burgundica*, *Burgundy* Pitch, which is a Mixture of Reſin, Oil of Turpentine and common Pitch.

5. *Piſſelæum*, Oil of Pitch or Tar.

6. *Piſſa*, another Sort of Tar.

7. *Pix Nigra*, black Pitch, which when dry becomes brittle and tranſparent, and is then called *Pix lucida*.

The Smoke of all theſe Subſtances produces a Soot called *Fuligo Picea*, as that called *Fuligo Oleaginoſa* is made by the Smoke of burnt Lees or Sediment of Olive-Oil. This laſt Soot ſticks to the Fingers when handled, and by this it may be diſtinguiſhed from the former.

8. *Balſamum Ipecuebæ.*

This Balſam is uſed in *Braſil* for Rheumatiſms. See the Sect. of Fruits.

9. *Oleum Cacao.*

This Oil is of a middle Conſiſtence between Hogs Lard and Wax, and of a white Colour. It is made by bruiſing the *Cacao* Nuts in a Mortar, and then boiling them in Water; the Oil which ſwims at the Top like a Cream is taken off and purified. It ſoftens the Skin, and is a very good Ingredient in Pomatums, for Chaps and Fiſſures in the Lips and Nipples.

10. *Oleum*

10. *Oleum Palmeum.*
Palm Oil.

This Oil is of a white Colour, and is got from the Fruit of a Tree named *Palma Conifera* C. R. P. It is recommended as a Liniment in Rheumatiſms and Palſies, to ſoften the Parts in reducing Luxations, and for ſtrengthening the Nerves.

ART. II.

Concreted Juices, which diſtill from Trees, whether Reſins, Gums, or Gum-Reſins.

1. *Aſa fætida, ſtercus Diaboli,* Σίλφιον *Græcor. Laſer Latinor.*

MAny Authors have doubted whether our *Aſa fætida* be that of the Ancients, which was by them called the Food of the Gods. But when we conſider firſt the Deſcription of *Dioſcorides*; and, ſecondly, the Relations of Travellers, who ſay, that the *Perſians*, *Indians*, and other Eaſtern Nations uſe, *Aſa fætida*, in Sauces, and call it alſo the Food of the Gods, there can be Reaſon to queſtion, but that ours is the ſame with the σίλφιον of the *Greeks*, and *Laſer* of the *Latins*, mentioned by *Petronius*.

Aſa fætida is a Gum Reſin, brought to us in Lumps of different Colours, white, yellowiſh, blue or brown, which laſt is the worſt Colour of all. It has a very ſtrong fetid Smell; and we are obliged to *Kæmpfer* for a very exact Hiſtory of the Tree, which produces it, of the Manner of gathering it, *&c.* In general, this Tree is of the Umbelliferous Kind, growing plentifully in the Province of *Lahir*, in the Dominions of the Great Mogol, and

in that of *Choraſan* in *Perſia*. In the Months of *July* and *Auguſt*, the Country People make Inciſions in the Roots of theſe Trees, thro' which the Juice drains. It is whitiſh and thin at firſt, but by drying ſoon becomes thicker, and of a brown Colour; and in this Form it is gathered and preſerved for Uſe.

Aſa fætida is an excellent Remedy in all Hyſterick Diſorders, whether only ſmell'd to, or mixed with what is taken inwardly. It is alſo reckoned a good Sudorifick and ſtrengthens the Stomach. The Doſe is from twelve Grains to half a Drachm, but with a View to the Stomach only it muſt be given in ſmaller Doſes. Externally, it is a good Reſolvent; and in that Intention, is an Ingredient in the *Ceratum de Galbano*, and is ſometimes tied to the Bits of Horſes Bridles.

2. *Bdellium Offic.*

There are two kinds of this Juice in the Shops; one in great Lumps of a red Colour, and bitter Taſte; the other very hard, brittle, a little bitteriſh, and of a ſtrong Smell. Both ſorts are brought from *Africa*, and undoubtedly come from *Abyſſinia* or *Ethiopia*; but we are ignorant of the Plants which produce them. *Bdellium* is a good Sudorifick, Emmenagogue, and Attenuant; and it likewiſe is an Ingredient in the *Emplaſtrum Diachylon*, *Unguentum Apoſtolorum*, &c.

3. *Benzoinum, Aſa Dulcis Offic.*

This is a reſinous, inflammable Subſtance, ſometimes of a reddiſh, ſometimes of a pale Colour, and generally very foul. When it is cover'd with white Spots, it is called *Benzoinum Amygdaloides*. It is of an agreeable Taſte, a little acid, and is much uſed in Perfumes. It it not certain that this Juice was known to the Ancients. It is brought from the *Philippine*

lippine Iſlands, from *Siam* and *Sumatra*. M. *Grimm* has deſcribed the Tree which produces it, and the Manner of preparing it, in the *Ephemerides Naturæ Curioſorum*, An. 1. Dec. 2. It is very proper in Aſthmas, to attenuate the Phlegm which oppreſſes the Lungs, and in Ulcers of that Viſcus; but the Flowers of Benjamin are preferred for Internal Uſe.

4. *Camphora, Caphura Officin.* Camphire.

Camphire is found in ſeveral Places of the *Eaſt Indies*; but the two principal Kinds are thoſe of *Borneo* and *Sumatra*. It is likewiſe produced in *Japan*; and there is a very precious Sort in the Iſland of *Ceylon*, which comes from the Roots of the Cinnamon Trees. The Camphire of *Borneo* is very rare, and in the *Indies* one Pound of it is reckoned worth a hundred Pounds of that of *Sumatra*, and therefore the *Hollanders* import only this latter Sort, which, for Medical Uſes, is very little inferior to the other.

Camphire is a reſinous Subſtance, very light, of a whitiſh Colour, and ſo inflammable, that when once ſet on Fire, it will burn on the Surface of Water. The Smell of it is very aromatick and penetrating, and when expoſed to the Air, it ſoon waſtes. The Tree that produces it in *Sumatra* is by *Breynius* named *Arbor Camphorifera*; and by *Kæmpfer*, *Laurus Camphorifera*. Beſides what diſtils naturally from the Trees, they likewiſe obtain it by diſtilling the ſliced Roots with Water, in an Alembick, the Head of which is made of Straw, ſo that all the Humidity evaporates through the Head, and the Camphire ſticks to it. It is at firſt of a greyiſh Colour, but in refining it the *Dutch* bring it to a white Colour, and it is then tranſparent. It is refined by Sublimation, in a Sand Heat.

Camphire, taken inwardly, is Cordial and Sudorifick; and likewiſe Anodyne, in as much as it

removes Obstructions, which cause Pains. It is excellent in the Hysterick Passion, both taken inwardly and applied outwardly; and some Authors have said, that the Quantity of one Grain applied to the Navel has cured a Fit of the Vapours. It is likewise a powerful Resolvent, by its penetrating and attenuating Quality. Camphorated Spirit of Wine, made by dissolving Camphire in that Liquor, is very proper to discuss an Erysipelas, and other Inflammations of that kind. It is likewise a good Ingredient in Collyriums in an Ophthalmia, and powerfully attenuates the thick Humours which are the Causes of Rheumatisms. When carried in ones Pocket, it is a great Preservative against the Effects of bad Airs; and Plaisters with Camphire and Opium have done Wonders, where all other Remedies have failed. The Antients believed that Camphire was an Enemy to Generation, but that Conceit was very contrary to Truth.

5. Caranna seu Caragna Officin.

This is generally termed a Gum, but very unjustly, because it is dissoluble only in Spirit of Wine, which is the Property of resinous Substances. It is a soft Body, of a greyish Colour, with a little Cast of Green, brought from the Province of *Mechoacanna* in *America*, being the Product of a Tree named *Caranna Monaid. C. B P.* and *Arbor insaniæ Caragna nuncupata Hernand.* It is a powerful Resolvent, and in that Intention is used for Rheumatisms, for Defluxions of the Eyes, and for the Tooth-ach. For this last Distemper a Plaister of *Caranna*, of the breadth of a Shilling, is to be applied to the Temples on the aching Side of the Head, and if the Nerve is not bare, this generally removes the Pain. M. *Fagon* used to make a Plaister of this Resin for Head-achs, which he applied to the whole Scalp, first well shaved.

6. Copal

6. *Copal Officin.*

The Natives of *America* give the Name of *Copal* to all odoriferous Gums which are tranſparent. The Gum we commonly call by that Name is not much uſed in Phyſick, but is in great Eſteem with the Varniſhers, who diſſolve it in *Oleum Spicæ*. It has been ſometimes employed in Fumigations for violent Defluxions of the Head, and in *Cucuphas* for the ſame Purpoſe.

7. *Gummi Anime Officin.*

The *Indians* call by this Name all odoriferous Reſins that are of a Red Colour; and by this Colour they are diſtinguiſhed from *Copals*. What we uſe is probably not the ſame with what the Antients called *Cancamum*. Ours has the ſame Virtues with *Copal*, and is uſed in the ſame manner in Perfumes and Fumigations.

8. *Elemi Officin.*

This is a Reſin, becauſe it is ſoluble only in Spirit of Wine. We have two kinds of it, one called *Elemi Legitimum Æthiopicum*, which is at preſent very rare; the other is brought in Lumps from *America*, which is of a ſtrong Smell, ſomething diſagreeable, and of an acrid bitter Taſte. It is an excellent emollient and detergent Vulnerary, and a great Strengthener of the Nerves. It is an Ingredient in the *Emplaſtrum Andreæ à Cruce*, *the Balſamum Arcæi*, &c.

9. *Euphorbium Officin.*

This is a Gum Reſin, which diſtils in milky Drops from a Plant called *Euphorbium Antiquor. C. B. P.* It is ſo violent a Purgative that it cannot ſafely be taken inwardly; but when diſſolved in the Yolk of an Egg, and afterwards diluted with Oil of ſweet Almonds, ſome venture to give it as a Clyſter,

in the Quantity of twelve Grains, in Lethargick Caſes, and ſtubborn Palſies. It is likewiſe uſed in ſome Snuffs, mixed with Tobacco, but it would be better to mix it with Juice of Liquoriſh. *Euphorbium* may alſo be uſed to ſeparate the carious Parts of Bones.

10. *Galbanum Officin.*

This is a Gummi-Reſinous Subſtance, which diſtils by Inciſion, from the Plant named *Ferula Galbaniſera*. It is a very good Anti-hyſterick, Emmenagogue, and forcing Medicine; and even when applied in a Plaiſter to the Navel, will cure Hyſterical Convulſions. It is likewiſe ſudorifick, when taken inwardly; and, when outwardly applied, it ſoftens and digeſts Tumours, and brings them to Suppuration. For inward Uſe it ought to be ſtrained, but not for outward. It is the Baſis of the *Ceratum de Galbano*, and is an Ingredient in the *Emplaſtrum Matricale*.

11. *Gummi Ammoniacum.*

We do not know the Plant which yields this Gum. It is a powerful Reſolvent, and Purgative in a ſmall Degree. It removes Obſtructions of the *Viſcera*, eſpecially of the *Uterus*, and thus is both a good Emmenagogue and Aperient, when given from a Scruple to half a Drachm; and is very proper to be mixed with Preparations of Steel, and Flowers of *Sal Ammoniac*, in Pills or Bolus's. Outwardly applied it is a good Reſolvent.

12. *Gummi Arabicum.* Gum Arabick.

It is ſoluble in Water, but not in Spirit of Wine. It flows naturally from the *Acacia Ægyptiaca*, ſometimes like ſmall Worms, whence it is called *Vermiculatum*. It is emollient and diuretick, and uſed in many Compoſitions for Diſeaſes of the Thorax, becauſe it ſheathes the ſharp Parts of the Serum in the

the *Bronchia* by its mucilaginous Parts; and, by the ſame Means, becomes uſeful in Diſeaſes of the Kidnies, Uterus, and Bladder. On this Account, it is given in a Dyſuria, Strangury, Heat of Urine, *&c.*

13. *Gummi Noſtras.* Cherry-tree Gum.

This is ſuppoſed to have the ſame Qualities with Gum Arabick.

14. *Gummi Guajaci.*

This Gum runs through the Cracks of the *Lignum Vitæ* Tree; and ſome Phyſicians make uſe of nothing but it and the Mercurial *Panacea*, for the Cure of Claps.

15. *Gummi Gutta, Cambogium, Gutta Gambe, Gutta Gamandra.* Gamboge.

This is a Gum Reſin, which flows from two different Plants in the *Eaſt Indies*; but, notwithſtanding all that is ſaid by *Herman*, and by the Authors of the *Hortus Malabaricus*, we are ſtill uncertain what theſe Plants are. This Gum communicates a fine dark Gold Colour to the Water in which it is diſſolved. It purges very well in the Quantity of four Grains; but, from ſix to eight Grains, it purges and vomits violently. It is reckoned particularly ſerviceable in Dropſies, by evacuating the Watery Parts of the Fluids; and as it has no Taſte, a very ſmall Doſe of it, ſuch as a Grain or two, diſſolved and mixed with Sugar, is very fit for Children. It is worthy Obſervation, that though this Gum is ſo very purgative, yet the Fruit of the Tree to which it belongs is perfectly harmleſs, and is eaten in the Country like Oranges.

16. *Gummi Hederæ.* Ivy-tree Gum.

This Gum comes from a Plant named *Hedera Arborea.* It is neither Cauſtick nor Depilatory, as

the Ancients imagined, but a powerful Reſolvent and Diſcutient, in which Intentions it is an Ingredient in ſeveral Plaiſters, and in the *Unguentum Dialtheæ.*

17. *Labdanum ſeu Ladanum Officin.*

This is a ſoft reſinous Subſtance, of a blackiſh or brown Colour. It is imported in Lumps and Cakes, rolled up much in the ſame manner with ſmall wax Candles; but this latter ſort is leaſt eſteemed, being mixed with ſome other Subſtance. It flows from a Tree named *Ciſtus Ladanifera Cretica flore purpureo, J. R. H.* In the Time of *Diaſcorides* it was gathered from the Hairs of the Goats, which fed among the Trees which produce it; but at preſent, according to M. *Tournefort*, the *Greek* Monks gather it from the ſame Trees with a ſort of Rakes. The *Greek* and *Turkiſh* Ladies carry little Balls of *Ladanum* to ſmell to, as ours do Noſegays or Oranges. It is an excellent Balſamick in Dyſſenteries and Hoarſeneſs; and being likewiſe aſtringent, it ſtrengthens the Stomach and Inteſtines, and when applied outwardly in Plaiſters, is uſeful in the ſame Intentions. The *Emplaſtrum ſtomachicum* of *Charas*, of which *Labdanum* is the Baſis, has been uſed with great Succeſs to ſtop habituated Vomitings. It is alſo an Ingredient in the Prior of *Cabriere*'s Plaiſter for *Hernias.*

18. *Manna Officin.*

This is the Product of a kind of *Fraxinus*, or wild Aſh, which grows in *Calabria*, named *Fraxinus Rotundiore folio, C. B. P.* It is a melleous Juice, of a ſolid Conſiſtence when dry, and in the middle of the little Lumps there are ſometimes ſmall Straws or Ruſhes, and when broken, they appear porous and cryſtalline; And as this cannot be imitated by Art, ſuch Manna may be depended on to be genuine. The other Kind is often mixed by the Druggiſts with a ſmall Quantity of Scammony, to make it more purgative; but as Scammony is not always

proper

proper, where Manna is preſcribed, the former kind ought to be preferred. In a large Doſe Manna cauſes Thirſt, by diſſolving and præcipitating the ſalivary Secretions; but this Accident is remedied by proper Drinks. Manna purges off the ſerous Humours more and better than any other Cathartick, and is therefore ſucceſsfully uſed in Dropſies, mixed with aperient Salts, the Activity of which is moderated by Manna. The Doſe is from one Ounce to four Ounces, given in Broths or other Drinks. It is ſometimes ordered by the Name of *Mel Aereum*, becauſe ſome have believed it to be a Dew. It was firſt diſcovered by the *Arabians*, having been unknown to the ancient *Greeks* and *Romans*.

19. *Maſtiche Officin.* Maſtich.

Maſtich is a Reſin of a tranſparent Gold Colour, and when burnt, of a very agreeable Smell. It may be chewed, like Wax, whereas *Sandaracha* breaks under the Teeth, and by this theſe two Subſtances may be diſtinguiſhed. It flows from the *Lentiſcus Vulgaris*, *C. B. P.* which is cultivated with great Care in the Iſland of *Chio*, and it is there forbidden, under Pain of Death, to cut any of the Trees. The *Turkiſh* Ladies chew Maſtich to preſerve their Teeth, and ſtrengthen the Gums. It is uſed inwardly, from half a Scruple to a Drachm, in Diarrhæas, Hæmorrhagies, *&c.* being an excellent Aſtringent and Stomachick. It is an Ingredient in many purgative Compoſitions, as a Corrector, and makes the Baſis of the *Emplaſtrum de Maſtiche*, &c. In Defluxions of the Teeth it is ordered to be chewed to cauſe Spitting; and mixed with a ſmall Quantity of Opium it is a Plaiſter, and applied to the Temporal Artery of the pained Side of the Head, it generally cures the Tooth-ach.

20. *Myrrha Troglodytica Officin.* Myrrhe.

Myrrhe is brought from *Æthiopia* and *Arabia Fœlix*; but we are ignorant of the Tree from which it

it flows. It is an excellent Stomachick, good in Indigestions, Aperient, Deobstruent, Emmenagogue, Astringent, Vulnerary, *&c.* and is used in Loosenesses, to destroy the Acrimony of the Humours in the Intestines. Outwardly applied it is a powerful Resolvent, and the *Tincture of Myrrh and Aloes* is a good Vulnerary, and prevents Mortifications. Myrrh put into the White of a hard Egg, in the place of the Yolk, and laid in a cool Cellar, resolves into an Oil *per deliquium*. It is an Ingredient in many Compositions, such as the *Emplastrum Divinum*, *Emplastrum Stibicum*, *Theriaca*, *&c.* It is generally chosen ungulated, that is, marked with small white Specks, in the Shape of Nails. The Ancients mention a Liquid Myrrh, which we are ignorant of; there is, however, some Ground to think that it is an oily Liquor found in the Body of the Tree; and this was the Myrrh offered by the *Magi* to our Saviour, because it was very precious, and an Ingredient in the richest Perfumes.

21. *Olibanum Officin. Thus Mas, Mamma Thuris, Olibanum Mammosum, sive Testiculosum.*

The Tree that produces this Incense grows in the Heart of *Africa*, but we know not what it is. It is a good Sudorifick, and has by some been ordered in Pleurisies in the Quantity of a Drachm, being first baked in an Apple, by the Fire-side, and then eaten. This Medicine ought to be taken in the Beginning of the Disease, after the Patient has been blooded once or twice. This Method was followed for a whole Year at the *Hotel Dieu*, by M. *Hangard*, Physician of that Hospital, with surprising Success; but the next Year it had scarce any Effect at all. *Olibanum* is likewise Cordial, and very serviceable in Hæmorrhages when mixed with proper Astringents. Externally, it is Resolvent, Emollient, *&c.* and resists Putrefaction. It may likewise

likewiſe be uſed as a Fumigation to raiſe Sweat, in Rheumatiſms, either alone or mixed with Amber.

22. *Opoponax Offic.*

This is a Gum Reſin, got from a Plant named *Panax Heracleum*, J. B. As it flows through the Cracks of the Trees, it is of a yellow Colour, but by Age it turns red. It is of a ſharp, bitter, diſagreeable Taſte. Outwardly applied, it is emollient, attenuant, and reſolvent; but internally it is purgative, uterine, antihyſterick, carminative, *&c.* The Doſe is from twenty Grains to a Drachm, and it is an Ingredient in many Compoſitions.

23. *Sagapenum Offic.*

The Tree that produces this Gum Reſin, is believed to be a *Ferula*. It is purgative, attenuant, aperitive, and proper in Obſtructions of the Meſentery, in Vapours, and to provoke the Menſes. The Doſe is from twenty Grains to a Drachm. Outwardly it has the ſame Qualities with the foregoing.

24. *Sandaracha Offic. Vernix Arabum.*

This is a Gum Reſin, which flows from the *Cedrus Lycia major Dodon.* It is attenuant and reſolvent, but is ſeldom uſed in Phyſick, though very much by the Varniſhers, being firſt diſſolved in Spirit of Wine. It is likewiſe uſed to embelliſh Writings, being firſt ſcatter'd on the Paper, and afterwards rubb'd with a Wolf's Tooth; for by this means the Paper continues to bear Ink, and all Eraſions diſappear. It is ſometimes confounded with Juniper Gum, and is very different from that kind of Orpiment, which was the *Sandaracha* of the ancient *Greeks*; of which above.

25. *Sanguis*

25. *Sanguis Draconis Offic.* Dragon's Blood.

This is the Juice of the *Draco Arbor Cluſii*, and is now brought from the *Canary Iſlands*. When bruiſed, it gives a fine red Colour, and was the Cinnabar of *Dioſcorides* and the ancient *Grecians*. Taken inwardly, it is a very good Aſtringent and Dryer. The late *Helvetius* melted it with powder'd Alum, and then made them into Pills for Diarrheas, Hæmorrhages, *&c.* But the Patient ought firſt to be prepared by Bleeding, *&c.* It is entirely ſoluble in Spirit of Wine. The *Dutch* counterfeit it with Gum Arabick and Alum, diſſolved in Water, with *Braſil* Wood, to give it the true Colour; but this factitious kind ought not to be taken inwardly, though it is very proper for Painters.

26. *Sarcocolla Offic.*

The Plant that produces this Juice, is unknown. It is detergent, aſtringent, conſolidating, and an Ingredient in many drying Collyrium's, which are very ſucceſsfully uſed in ſmall Ulcers of the Eyes, after thoſe made with *Florentine* Orice and white Vitriol; and to make it into a Collyrium, nothing is required but to diſſolve it in Plantane Water.

27. *Scammonium, ſeu Scammoneum Offic.* Scammony.

We have two ſorts of Scammony in the Shops, that of *Aleppo*, and that of *Smyrna*. The firſt is the beſt and moſt purgative, and is got from a Plant named *Scammonea Syriaca*, C. B. P. which is a Species of *Convolvulus*. It is a very ſtrong Cathartick, but cauſes great Irritation, and even Inflammations in weak Habits. It is given in Subſtance from two to twelve Grains; but ought never to be uſed when there is the leaſt Suſpicion of Inflammations in any Part

Part of the Abdomen. It is likewiſe a very tickliſh uncertain Purge. Sometimes it has no Effect at all, ſometimes it cauſes fatal Super-purgations; and which is moſt remarkable, it ſometimes does not operate at all the firſt Day, but brings on an unſupportable Teneſmus and Hypercatharſis the next. It is very proper to dilute it with ſome oily viſcid Subſtance, ſuch as the Yolk of an Egg, or an Emulſion made with ſweet Almonds and the cold Seeds. Prepared Scammony, or *Diagridium*, is a very proper Ingredient in the *Pulvis Cornachini*, which purges without any of the bad Effects of Scammony. *Madame Grimaldi*'s *Powder* ſeems to be nothing but the *Pulvis Cornachini* diſguiſed. Scammony is the Baſis of many purgative Compoſitions, ſuch as the *Diaphœnicum*, the *Diaprunum*, *Confectio Hamech*, &c.

28. *Styrax Calamita Offic.*

This is a reſinous Juice of a reddiſh Colour, very agreeable Smell, like that of Benjamin, and of a pretty ſolid Conſiſtence. It comes from the *Styrax folio Mali Cotonei*, C. B. P. It is ſometimes very foul, and therefore ought to be choſen ſhining and tranſparent. It is a very good Cordial, Antipeſtilential, and Strengthener; and when outwardly applied, it is diſcutient. The Tincture of *Styrax* made with Spirit of Wine, added to that of Benjamin, makes a very good *Lac Virginale*, or Coſmetick Waſh.

29. *Tacamahaca Offic.*

This is a reſinous Subſtance, of which there are two kinds, one in Shells, and one in Lumps. The firſt is moſt eſteemed, and is ſometimes named *Tacamahaca ſublimis*. It is of a very agreeable Smell, like that of Lavender and Angelica, and is brought from

from *Madagaſcar* and *New Spain*, being the Product of a Tree named *Tacamahaca populo ſimilis fructu & colore Pæoniæ*, J. B. *Tecomahoica*, *Hernand.* It is uſed externally in the ſame Intentions with the Gum *Caragna*, and likewiſe reſolves Tumors, ſtrengthens the Nerves, and cures the Head Ach, when applied in a Plaiſter to the Scalp.

30. *Tragacanthum Offic.*

This Gum flows from a Plant named *Tragacantha Cretica flore albo, lineis purpureis notato*, J. R. H. It is Emollient and Anodyne, and is therefore reckon'd very proper to abate the Acrimony of the Serum of the *Bronchia* and Inteſtines, in Coughs and Diarrhæa's. It is likewiſe Diuretick, and a good Corrector of many ſharp Catharticks. A Lohoch may be made of it by firſt making it into a Mucilage of the Conſiſtence of an ordinary Syrup, and then by mixing with this Mucilage Conſerve of Marſhmallows, or any other of the ſame kind, with a few Drops of Oil of ſweet Almonds. This Lohoch is ſuffered to melt in the Mouth, in Diſeaſes of the Thorax. The Mucilage of this Gum is likewiſe the Baſis of the greateſt Part of Pectoral Lozenges.

SECT. VII.

Fungi and other Excreſcences.

1. *Agaricus levis ſive fœmina, & Agaricus mas.* Agarick.

THE female Agarick is a *Fungus*, which grows on the Larch Tree. It is a porous, light Subſtance, cover'd with a yellow Bark, but within it is white; at firſt chewing, of a ſweetiſh Taſte, but afterwards bitter. Its Whiteneſs and Lightneſs diſtinguiſh it from the male kind. It is a ſlow Purger; but as it evacuates the ſerous Parts of the Fluids very effectually, it is very proper in an Aſthma, *&c.* The Doſe is from a Scruple to a Drachm, ſuſpended in a Bag in purgative Decoctions; but it ought never to be given to weak Stomachs. The Male Agarick is not uſed in Phyſick, but is employed in Dying. It is of a yellowiſh Colour, and heavier than the former. When ſoften'd in a Lixivium of Salt Petre, and afterwards dried, it makes a good ſort of Tinder.

2. *Auricula Judæ, Fungus Sambucinus.* Jews Ear.

This is a kind of Muſhroom, which grows on Elder. Outwardly applied, it is a good Reſolvent, being boil'd in Milk; and when boil'd in Vinegar, it makes a good Gargle for Swellings in the Throat, but is never uſed inwardly.

3. *Tubera*

3. *Tubera Cervina, Boleti Cervini.*

Theſe are a kind of Truffles or Muſhrooms, of the Size of a Filbird, found in *Germany* on the Surface of the Earth. When freſh, they have an aſtringent Taſte, but by drying they become more acrid. They are recommended in Hyſterical Affections, and to increaſe the Milk of Nurſes, being taken from a Scruple to a Drachm, but at preſent they are very little uſed.

4. *Lycopodii Pulvis, Sulphur vegetabile.*

This is a fine yellow Powder, iſſuing from the Stalks found among the *Muſcus Terreſtris*, or *Lycopodium*. It is gather'd in the Autumn, and when dried, eaſily takes Fire and fulminates. It is uſed in *Germany* for Epilepſies in Children, being given from ten to thirty Grains. It is likewiſe recommended in Dyſenteries, intermitting Fevers, and in the Stone.

5. *Bedeguar Offic.*

This is a ſpungy Excreſcence of the Sweet Briar, produced by the Sting of Inſects. In *Italy* they lay the Powder of this Spunge on Parts bit by venomous Creatures after Scarification.

6. *Poco Sempie, Skinkia Offic. Agnus Scythicus ſeu Tartaricus, ſive Borometz. Muſcus Aureus.*

Two very different Things have been called by the Name of *Boromets*; the firſt is a kind of Fur much eſteem'd, found near the *Caſpian* Sea, which is really the Skin of an Animal like a Sheep, as is obſerved by *Kæmpfer*. The other is a kind of *Filix Arborea* or Fern, which grows near *China* and in *Japan*, reſembling the four Feet and Navel of a little Lamb, and is cover'd with a fine Moſs or Down. Hence aroſe the Fable of its being a *Zoophyta*;

phyta; which is accounted for and explained by *Kæmpfer*. Father *Plumier*, and ſeveral other Travellers have brought the Plants themſelves into *Europe*. The Down that grows upon it, is celebrated for an Aſtringent, and eſpecially in ſpitting of Blood, being held for ſome time in the Mouth; and it is certain that it has ſome times ſucceeded.

7. *Galla Orientalis Offic.* Galls.

There are ſeveral ſorts of Galls; the firſt and beſt is termed the *Aleppo* Nut, or *Galla Spinoſa*; the ſecond is white; the third ſmooth and round; the fourth of an irregular Figure; and the fifth has a kind of Crown. All theſe Galls are owing to Inſects, which firſt prick the Oak Trees, and then lay their Eggs in the Wound. Theſe Eggs ſwell with the Excreſcence, and firſt turn to Worms, then to Flies; which having perforated the Galls, make their Eſcape. And as ſome Eggs are unfruitful, and remain in the Gall, they are obſerved to yield a volatile Salt.

Galls are very aſtringent, and are by ſome given inwardly in Dyſenteries. They have likewiſe been recommended in Intermitting Fevers; but the Foundation of their febrifugous Quality depends on too few Inſtances to be relied on.

8. *Cardui Hæmorrhoidalis Capitula.*

This is an Excreſcence or Tumor of the *Carduus Vinearum Repens Sonchi folio*, C. B. P. They lie like Knots along the Stalk of the Plant, and are likewiſe owing to the Eggs and Juice of Inſects. They are ſaid to be a Preſervative againſt the Hæmorrhoids; but this is without Foundation.

9. *Grana Kermes Offic. Coccus Infectorius, Grana Tinctoria.* Kermes Berries.

Theſe are Excreſcencies of the *Ilex Cocciglandifera*, C. B. P. They are much uſed by Scarlet Dyers. They were firſt proved to be Excreſcences by M. *Fagon*; but their Origin has been ſince more fully explained by Count *Marſigli*. They are gathered in *Languedoc* near *Montpelier*, and are generally ſo full of ſmall Worms and other Inſects, that they deſerve to be reckon'd Animal rather than Vegetable Subſtances.

In Medicine, they are eſteemed to be greatly cordial and ſudorifick, being very full of volatil Salt. They are given in Powder, in the Quantity of twenty-four Grains, every ſix Hours, to prevent Abortion from any Strain or Hurt; for this Powder ſtrengthens both Mother and Child, and ought to be continued for ſome Days. They are the Baſis of the Syrup and Confection of *Alkermes*.

10. *Coccinella Offic. Coccus Indicus Tinctorius.* Cochineal.

This is altogether an Animal Subſtance, being a kind of Bug with ſix Legs, which ſticks on the *Opuntia major*, or prickly Pear, and ſeveral other Plants, from whence the *Indians* remove them to the *Opuntia*; and when they are come to their full Growth, they kill them with cold Water, and afterwards dry them. Cochineal is uſed in all the ſame Intentions with Kermes; and beſides the common Scarlet is the Baſis of that beautiful Colour called Carmine, which is uſed by Painters.

PART

PART IV.

The Animal Kingdom.

1. *Cantharides Offic. Muſcæ Hiſpanicæ.*

THESE Flies are very common in *Spain*, and in ſome other Places. They act not only on the Membranes of the Bladder, but likewiſe ſometimes on the Stomach; and the Patient often vomits them up, before he feels any Heat of Urine, which afterwards becomes almoſt intolerable. A famous Inſtance of which was in a young Man, to whom they had been given inwardly on a Love account. They are the Baſis of Veſicatories, and when thus applied, they attenuate and divide the Blood. Theſe Veſicatories raiſe Bliſters on the Skin, full of Serum, which being burſt, the Suppuration is kept up by Pear-tree Leaves, or Plaiſters which contain ſome ſuppurating Ingredients. They are uſed in Defluxions of the Eyes, Teeth, *&c.* in Lethargies, and in all Obſtructions which proceed from a thick viſcid State of the Serum. They are applied to the Shoulders, Thighs, and ſeveral other Parts of the Body. By mixing with the Blood and Urine, the Parts of theſe Flies often cauſe Suppreſſion and Heat of Urine, as is well known; and therefore when Veſicatories are applied in Apoplexies, Deli-

riums or Lethargies, it ought carefully to be obſerved whether the Patient makes Water freely, though he is not perhaps in a Condition to expreſs his Pain; and if he does not, he ought to drink Emollient Ptiſanes or Emulſions; or Milk, or Oil of ſweet Almonds ought to be injected into the Bladder through the Urethra. *Groenveldt* a *Dutch* Phyſician, who practiſed in *London*, wrote a Book *De tuto Cantharidum uſu interno*; in which he pretends that by adding Camphire as a Corrector, and making the Patient drink Emulſions plentifully, the bad Effects already mentioned might be prevented. His Project failed at that Time, and he had full Time to repent his Raſhneſs in a loathſome Priſon. But the internal Uſe of the Tincture of Cantharides has ſince been very common in *England*. In that Country likewiſe Veſicatories of Cantharides are frequently applied in Fevers with very great Succeſs.

2. *Scincus Marinus Offic.* Skinck.

This is a kind of ſmall Crocodile or Lizard found on the Banks of the *Nile*, and in other Parts of *Africa* and *Aſia*. It is an Ingredient in the *Mithridate* and *Diaſatyrion*, becauſe the Fleſh of this Animal is ſuppoſed to excite Tranſpiration, Sweat, and Luſt.

3. *Vipera Offic.* The Viper.

The yellow poiſonous Liquor of the Viper runs into the Wound made by that Animal through the poiſonous Phangs, in which there is both an Hole and a Slit near the Point. The Symptoms that attend this Bite, are very well deſcribed by many Authors; but the Cure conſiſts in making immediately a ſtrong Ligature on the Part; then ſcarifying and burning it with a hot Iron; or making a larger Inciſion, to be filled with Gunpowder, which is preſently to be ſet on Fire. This is the Method practiſed with Succeſs by Hunters, who happen

happen to be bit by mad Dogs. The Fleſh of the Viper either in Subſtance or in Broths is thought to purify the Maſs of Blood. The beſt way to make theſe Broths, is to cut the Viper into ſmall Pieces, and with theſe to ſtuff the Body of a Chicken, which is afterwards boiled as uſual. The Powder of Vipers is given from ten to thirty Grains, either in a Bolus or ſome proper Liquor. The Doſe of the Volatile Salt is from ſix to ten Grains in a Bolus. The *Oleum Viperinum* is recommended to diſcuſs Tumors and Rheumatiſms.

4. *Caſtoreum Offic.* Caſtor.

The beſt Caſtor is that of *Dantzick*; that of *Dauphiné* is likewiſe very good; but what comes from *Canada* is worth nothing. The Beaver, of which this Medicine is the Inguinal Glands, is found along the *Rhone*, the *Rhine*, and in *Poland*, *Ruſſia* and *Canada*. It is reckon'd a powerful Antihyſterick, and particularly adapted to cure hyſterical Convulſions of the Abdomen, even when held to the Noſtrils, or applied to the Navel. Some think the internal Uſe of it dangerous; but it is freely given by others. It likewiſe calms the Irritations and convulſive Motions of the Nerves; reſiſts any malignant Diſpoſition in the Fluids, and enlivens the Blood. The Doſe is from three to ten Grains.

5. *Moſchus Offic.* Muſk.

The Animal which produces Muſk, is a kind of Wild Fox, which is ſaid to have Bags under his Belly, in which the Muſk is form'd. The Muſk of *Tonquin* is the moſt valuable; but it is likewiſe found in the Northern Part of the *Mogul*'s Country, in *Tartary* and in *Bengal*, from whence we have it. The *Arabians* uſed Muſk as a great Cordial; but at preſent it is left out in almoſt all the Compoſitions in

which they directed it, as being prejudicial to Perſons of both Sexes ſubject to Vapours; and as it likewiſe heats very much, it is very little uſed in Phyſick. Cotton impregnated with Muſk is very good in that kind of Deafneſs, which is owing to too great Thickneſs and Viſcidity of the Fluids.

6. *Zibethum ſive Catus Moſchatus.* Civet.

The Animal which yields Civet, is a kind of wild Cat, called by the Ancients *Hyæna.* There are two kinds of it; one that comes from *Holland*, and another that comes from *Guinea*, which is browner than the former. When Civet is mixed with Muſk and Ambergreaſe, or lowered by a Mixture of any other Powders, it has a very fine Smell; but alone, the Smell is diſagreeable. It is very little uſed in Phyſick. Some rub Childrens Navels with it, to cure their Cholicks, and it was formerly applied to the *Pudenda* of Women in Hyſterick Fits; but this laſt Practice is not only uſeleſs, but hurtful.

7. *Veſiculæ Moſchatæ Orientales.*

Theſe Bags are got from a kind of Muſk Rats in the *Eaſt Indies*, and they are ſaid to be ſituated as thoſe of the Civet Cat.

8. *Sanguis Hirci Alpini, ſeu Rupi Capræ.*

We have three different Subſtances, that are generally termed *Sanguis Hirci*, or Goats Blood. The firſt is that mentioned in the Title. The ſecond comes from the *Ibex* of *Geſner* and *Aldrovand*; and the third is Kids Blood, *Sanguis Hædi.* That which is brought from *Switzerland*, is a powerful Sudorifick, and is recommended in Pleuriſies; but it ought never to be given till the Veſſels have been well emptied. *Helmont* talks of very great Miracles to be performed with this Medicine.

9. *Priapus Balænæ vel Ceti.*

This is a kind of hard Cartilage, which is found in the *Penis* of Whales. It is recommended by Authors as a good Sudorifick, Diuretick, and an Exciter to Venery; but it is very groundleſly ſaid to be Lithontriptick.

10. *Cornu Cervi Offic.* Harts Horn.

This is a moderate Cordial and Aſtringent; its volatile Salts being mixed and qualified by a mucilaginous Subſtance, made into a Gelly with Water, it is very proper in Diarrhæas. In Subſtance from twenty Grains to a Drachm, it is gently ſudorifick, and may ſafely be given in malignant Fevers, the Small-pox, Meaſles, *&c.* The Tips of the Horns, penetrated by the Steam of boiling Water, turn into a ſoft Subſtance, which when the Skin is taken off, is white, and then goes by the Name of *Cornu Cervi philoſophice præparatum.* For this Preparation nothing is required but to ſuſpend the Horn at the Top of a Cucurbite, in which Plants are diſtilled. It is a good Abſorbent, with ſome Share of active and volatile Principles. Shaved Harts Horn is put into Ptiſanes, as an Aſtringent.

11. *Ebur Offic.* Ivory.

The Qualities and Ways of uſing Ivory, are the ſame with thoſe of Harts Horn. Ivory is likewiſe calcined as a good Antidyſenterick. This goes by the Name of *Spodium Eboris*, and *Ebur Uſtum.*

13. *Dens Apri.* Boars Tooth.

This is reckon'd a good Sudorifick, being powder'd and taken from one to two Drachms.

13. *Mandibulæ Lucii Piſcis.* The Jaw Bones of a Pike.

Theſe are abſorbent, and paſs with ſome for a good Sudoriſick, being taken in the Quantity of a Drachm in Carduus Water. They are by others recommended in Pleuriſies.

14. *Cornu Rhinocerotis.* Unicorn's Horn.

There are four kinds of Land Animals called by the Name of *Monoceros*, *Rhinoceros*, or Unicorn. The firſt is called by *Geſner*, *Orix Biſulca*, *ſive Strepſiceros*, *id eſt*, *Lupus Marinus*. The ſecond, *Aſinus Indicus Monoceros*. The third is the Unicorn, painted like a Horſe, with a Horn in his Forehead, ſaid by fabulous Authors to be found in the remote Parts of *Æthiopia*. The fourth is the true *Rhinoceros*, found in *Africa* and in the Iſland of *Java*, deſcribed by *Bontius*. The Horn, or rather Tusk of this Animal is turned up toward his Noſe, and in a young Animal is about a Foot and an half long. This Horn is ſudoriſick, in the ſame manner as other Horns, but it has not all the other Qualities attributed to it, both formerly and at preſent, by the *Indians*, who make Cups of it for their King, imagining that nothing drank out of ſuch Cups, can be poiſonous. Some Authors recommend it in Epilepſies of Children. Another kind of Unicorn's Horn belongs to a kind of Whale found in *Davis*'s Straits, and on the Coaſts of *Greenland* and *Iceland*, in the Icy Sea. This is a white contorted Horn from ſeven to ſixteen Foot in Length; but Authors are not agreed about the Manner where it is plac'd in the Animal. It is eſteemed a powerful Cordial, and proper in Hæmorrhages, Diarrhæas, *&c.* in the Quantity of twenty-four Grains. Others order Pieces of it to be worn about the Neck.

15. *Os*

15. *Os è Corde Cervi.*

This is a Cartilage found at the Baſis of the Heart of the Stag, which oſſifies in their old Age, and is look'd upon by ſome as a Cordial; but in Shops, to which it is order'd, the Bone in the Heart of Oxen is often ſubſtituted for it, as being of equal Virtues. This Bone is an Ingredient in many Compoſitions.

16. *Os Sepiæ.* The Bones of the Scuttle-fiſh.

This Fiſh is a kind of *Polypus*. It has a Bag in its Neck, containing a black Liquor, like Ink, which it emits to trouble the Water, when purſued by other Fiſhes. The Bone recommended in Phyſick as a good Diuretick, is found about its Middle; others make a Powder of it for cleaning the Teeth.

17. *Bezoar Orientale & Occidentale Offic.*

Oriental Bezoar is a Stone of different Colours, but moſt commonly brown or Olive-colour'd, diſpoſed in different Strata. When thrown into the Fire, it gives a volatile vinous Smell, like all other Animal Subſtances. It comes from the Kingdom of *Boulan*, and from other Places of the *Eaſt-Indies* and *Perſia*, mentioned by *Kæmpfer*. It is formed in the Stomach of a kind of wild Goat, called *Cervi-Capra*, or *Capri-Cerva*. In the Heart of this Stone, ſome heterogeneous Subſtance is always to be found, which makes the Nucleus or Baſis of it; and round this a ſlimy Matter gradually hardens in different Layers, as in the human Calculus. It is moderately cordial, containing a volatile Sulphur and Salt in a pretty large Quantity; and there is no Danger in the Uſe of it, of heating the Patient too much. It is given from ten to twenty Grains in Fevers, *&c.* and likewiſe in Epilepſies of Children, after having emptied the Veſſels.

Occidental

Occidental Bezoar is likewiſe found in the Stomach of an Animal named *Capricerva Occidentalis*, a kind of Goat of *Peru* and *Mexico*. It is commonly white within, and yellowiſh on the Outſide; but is leſs eſteemed than the former. Wee ſee often foſſile Bezoars, which are brought from the *Weſt-Indies*, in room of the true Animal kind, but which have no Medicinal Virtues. They are eaſily known, both by not being diſpoſed in Strata, and by not emitting an urinous burnt Smell in the Fire.

18. *Lapis Bezoar factitius, ſive Lapis de Goa.*
Goa Stone.

This is a Compoſition of the five precious Fragments, Coral and Leaf Gold, mixed up with Gum Tragacanth. It is commonly of a blackiſh Colour, and is made by the Jeſuites in *Goa*. It is much uſed by the *Europeans* who live in the *Eaſt-Indies*, in the ſame manner as *Bezoar*, and is particularly recommended as a Sudorifick in Rheumatiſms.

19. *Ægagropila Offic. Pilæ Damarum.*
German Bezoar.

This is a little Ball found in the Stomach of Does and Goats in *Germany*, which ſome have pretended to be form'd by the *Doronicum* or *Leopard's Bane*, on which theſe Animals feed; but it is now certain that it conſiſts only of Hairs, which they ſwallow; and the like Balls are found in the Stomachs of Cows, Hogs, Boars, *&c.* and conſequently are of no medicinal Virtue; tho' from the falſe Opinion concerning their Original, ſome have celebrated them in Looſeneſſes, Hæmorrhages, *&c.* becauſe of the Plants from whence they conceived them to be formed. They have likewiſe been recommended in a Vertigo, becauſe the Goats which produce them climb

climb very ſteep Rocks without being giddy. *Vid. Velſchium de Ægagropilis.*

20. *Hippolithos.*

This Stone is found in the Bladder of Horſes, and may be uſed as Bezoar, becauſe it contains a volatile Salt, and provokes Sweat.

21. *Calculus Cyſtidis Felleæ.* Gall Stones.

Theſe Stones burn quite away in the Fire, being only concreted Bile; and the Gall of Animals brought to a due Conſiſtence by the common Methods, will anſwer all the Intentions in which they have been celebrated, and eſpecially the *Pedra del Porco*, which is nothing more than the Gall Stone of an *Eaſt-India* Porcupine.

22. *Margaritæ & Uniones Offic.* Pearls.

Theſe are a kind of Bezoar bred in Oyſters, and accordingly they conſiſt of ſeveral Strata, and are really ſtony Concretions. The beſt Oriental Pearls are found in the Iſland of *Ormus* in the *Perſian* Gulf. They are likewiſe gathered in the Gulf of *Mexico*, in the Province of *Coſta Rica*, and in ſeveral other Places of *America*; but theſe Occidental Pearls are leſs eſteemed than the former. Small Pearls, commonly called Seed Pearls, are likewiſe found on the Coaſts of *Scotland*. Sometimes they are found from two to ſeven in one Oyſter; which ſhews how unjuſtly they are termed *Uniones*, as if there were only one in each Shell. *Valentini*, on the Credit of one *Kregger*, pretends they are the Eggs of theſe Animals, but this deſerves Confirmation. When thrown into the Fire, they give an urinous Smell in a ſmall degree. They may ſometimes be whitened by taking off the outer *Stratum*, when yellowiſh, but this diminiſhes their Size. Pearls are a very good Abſorbent, being levigated

on

on the Porphyry like Crabs Eyes; but they have likewiſe other Qualities, ſince they yield a volatile Salt by the Retort, being on that account Cordial and Depuratory.

23. *Mater Perlarum Offic.* Mother of Pearl.

This is not the Shell in which the Pearl is found, as is commonly ſaid, but a Shell of another kind, called *Concha Margaritifera*, tho' it produces no Pearls. It is found in the *Mediterranean*. This is Abſorbent and Cordial, in the ſame Degree with Pearls; but then only the pureſt and moſt ſhining Parts of the Shells muſt be uſed, being firſt well levigated on the Porphyry; and theſe by the Retort yield a volatile Salt.

24. *Oculi ſive Lapides Cancrorum Offic.* Crabs Eyes.

Theſe are Stones found in the Stomach of Crabs, Crayfiſh, Lobſters, *&c.* and are found in great Plenty on the Coaſts of the *Baltick*. They are not found in the Bodies of theſe Animals, except at certain times of the Year; for in the Months of *June*, *July*, and *Auguſt*, in which they caſt their Shells, no Stones are to be found in them. The Stones are form'd in two Bags, one on each Side of the Stomach. Theſe Animals caſt their Shells about the Month of *July*; and what is ſurprizing, this Change reaches not only to the Shells by which they are covered, but alſo to the Membranes of their Stomach; for if after the outward cruſty Shell is changed, we examine their Inſides, we find the old Stomach conſumed and digeſted by a new one; which being compleatly formed, a milky Juice fills the Bags above-mentioned, out of which the Stones, falſely called Crabs Eyes, are formed, which in the next Change ſerve to nouriſh the Animal. This Change of their internal Parts was firſt obſerv'd by

by *Van Helmont*, and afterwards by *Sachi*, *Wepfer*, and others; but the beſt Account we have of this whole Affair, is that of *M. de Reaumur*, in the *Memoirs of the Academy*, 1712, 1718.

Crabs Eyes are abſorbent, and likewiſe contain a ſmall Quantity of a volatile Principle. They are prepared by Levigation on the Porphyry; but in ſome Conſtitutions, tho' reduced to the moſt impalpable Powder, they cauſe an *Eryſipelas* and other Diſorders, eſpecially to Women, of which M. *Geoffroy* has ſeen ſeveral Inſtances. They are likewiſe in a ſmall Degree Diuretick.

25. *Chelæ Cancrorum Offic.* Crabs Claws.

Theſe are uſed much in the ſame manner with Crabs Eyes; but they contain an Ammoniacal Salt, which the other has not. They are an Ingredient in the Counteſs of *Kent*'s Powder.

26. *Lapis Manali.*
The Stone of the Sea Cow.

This is the *Os Petroſum* of that Animal, which ſome recommend to be worn about the Neck, as a Preſervative againſt Hæmorrhages.

27. *Dentali ſeu Dentalium Offic.*

This is a ſmall Shell or oblong Conical Tube of a white Colour, which incloſes a Sea Worm. It is found on the Coaſts of *England*, and is Alcaline, Abſorbent, Cordial and Aſtringent. There is another kind of *Dentali* found on the Coaſt of *Normandy*, which is no more than a ſmall Heap of Sand, in which a Worm hides it ſelf.

28. *Eutali*, *Eutalium Offic.*

Theſe are Tubes or Shells almoſt like the former, but longer and cylindrical, and ſerve likewiſe to contain a kind of Sea Worm, having the ſame Virtues with the *Dentali*.

29. *Tu-*

29. *Tubuli Marini, in quibus Vermiculi deliteſcunt.*

Theſe are the pretended Skins of Serpents brought from *Malta*, but are in reality nothing but Shells or Tubes in which Worms are lodged.

30. *Umbilicus Marinus Bellirícus, ſeu Belliculus Marinus.*

This is the Cone of a Shell, in ſome meaſure repreſenting a Navel, and which the Animal opens and ſhuts at pleaſure. It has the ſame Virtues with Crabs Eyes, and is beſides hung by the good Women about their Childrens Necks, to preſerve them from the Cholick.

31. *Unguis Odoratus, ſeu Blatta Byzantina Offic. Onix Dioſcorid.*

This is not a Nail, but a Subſtance like Horn, with which a Fiſh ſhuts its Shell at certain Times. This Fiſh is deſcribed by *Romphius*, under the Name of *Purpura Murex*. It is named *Unguis Odoratus*, from its Figure and agreeable Smell; which Smell is not however natural to the Shell, but acquired by its being imported with the *Schænanthe*. The Antients reckon'd it a powerful Cordial, and ſuch it certainly is in ſome degree. When burnt, the Smell of it is good in the Vapours.

32. *Lapis Colubrinus, Pedra de Cobra de Cabelos Luſitanor.*

This is an oval black Stone with greyiſh Specks, and which being porous, ſticks to the Tongue. But probably it is a Compoſition, the Baſis of which is calcined Bones; and notwithſtanding all that Authors have ſaid about it, it is to be reckon'd no more than a ſimple Abſorbent.

33. *Fol-*

33. *Folliculi Bombycini.* The Cod or Bags of Silkworms.

Both the white and red Bags may be uſed indifferently, as being equally ſtored with volatile Salt. They are the Baſis of *Goddard*'s Drops, and Ingredients in ſeveral other Cordial Compoſitions, ſuch as the *Confectio de Hyacintho*, when made in the beſt Manner.

34. *Folliculi Aranearum.* The Cod or Bags of Spiders.

M. *Bon*, Preſident and Member of the Royal Academy of *Montpelier*, cauſed Gloves and Stockings to be made of theſe Cods, and likewiſe a ſort of Drops, in imitation of thoſe of *Goddard*, becauſe they contain a great Quantity of Volatile Salt.

35. *Ichthyocolla Offic.* Iſinglaſs.

This is drawn from the Intrails, Fins and Tail of a large Fiſh, called according to ſome by the ſame Name, and *Huſo* according to others, found in the *Volga*, *Danube*, and ſome other great Rivers. It is an Ingredient in ſome Agglutinant Plaiſters, and is likewiſe reckon'd emollient and reſolvent. Wine-Merchants uſe it in fining their Wines; for which purpoſe they beat up a ſufficient Quantity of it with Wine, and afterwards throw this Mixture into the Caſk, where it firſt forms a Skin or fine Network on the Surface, and then precipitates to the Bottom, carrying along with it all the groſſer Parts of the Liquor; ſo that the Filtre may in this Caſe be ſaid to paſs through the Liquor, and not the Liquor through the Filtre. This is a very harmleſs way of purifying Wine, which is more than can be ſaid of the other Methods.

36. *Gluten Taminum.* Glue.

Glue is made of the Shreds of Ox Skins, cut in ſmall pieces, and boil'd to a Gelly, being ſometimes mixed with the Cartilages and Tendons of the ſame Animals, and afterwards evaporated and dried. Beef may be managed in the ſame manner, to make Portable Soupe, requiring nothing afterwards but to be diluted with a due Quantity of boiling Water. This Soupe may be ſent by the Poſt, and is very convenient at Sea; and in the time of the Plague at *Marſeilles* many Perſons lived upon it.

37. *Nidi Alcyonum ſeu Hirundinum.* Neſts of *Indian* Swallows.

They are found on the Rocks on the Coaſts of *China* and *Japan*. They are of a Subſtance much like *Gum Tragacanth*, and when mixed in Broth or warm Milk, they ſwell and make a thick Soupe, much eſteemed in theſe Countries, as a Reſtorative, eſpecially in Diſeaſes of the Lungs. They are alſo reckoned delicious Food for Perſons in perfect Health.

38. *Cera flava & alba Offic.* Wax.

This is a reſinous Duſt which Bees pluck from Flowers. The white Wax is only the yellow well waſh'd and expoſed to the Air. But there is beſides a natural kind of white Wax, made by a kind of Flies in *China*, which is very rare. There is another kind of Flies in *Guadaloupe*, which yield a black Wax, but they have not hitherto found the Secret of whitening it. Yellow Wax is moſt proper for Medical Uſes, being a very good Reſolvent, and proper in Diſeaſes of the Skin. It likewiſe ſerves to give Conſiſtence to Plaiſters and Cerates.

Honey

Honey has excellent Qualities, being a natural Soap, very advantageous in Diſeaſes of the Thorax.

39. *Gummi Lacca Offic.*

This is a kind of Gum Reſin gathered by Ants in the *Eaſt-Indies* from Flowers, which they afterwards carry to the Branches of Trees to make their Neſts, in which they probably lay their Eggs; becauſe theſe Neſts are diſpoſed in Cells, in ſome of which a ſmall Grain is found, which is red when bruiſed, being the Worm out of which theſe wing'd Ants are afterwards form'd; and it is on account of theſe Grains that we rank this Gum Reſin among the Animal Subſtances. It is brought to us in Grains formed by ſtraining it through a Linnen Cloth, after having diſſolved it in warm Water; in Cakes made by melting the Grains into one Maſs; and in Sticks, which is the Gum ſtuck round the Branches of Trees by the Ants. *Lacca* is the Baſis of Sealing Wax, which is made in the *Eaſt-Indies*, by mixing it with Vermillion; but in *Europe*, by mixing Cinnabar, Colophony and Benjamin, in melted *Lacca*. *Lacca* is brought chiefly from the *Molucca* Iſlands, and alſo from *Madagaſcar*.

40. *Mumia vera Offic.* Mummy.

There are two kinds of Mummy; the firſt of which has its Original from human Carcaſſes dried by the Sun and Sands in the Deſerts of *Africa*, ſuch as thoſe of *Zara*, *Lybia*, &c. where the Winds ſometimes bury whole Caravans in the Sands. Theſe Bodies by drying become of the Conſiſtence of Horn, and very light. Theſe are called white Mummies, but are not uſed in Phyſick. The ſecond ſort are the Embalmed Bodies found in *Egypt*, which are very rare, and ſeldom to be met with among the Druggiſts; in place of which they ſell

us Parts of Bodies embalmed with Myrrh, Aloes, Incenſe, *&c.* by the Jews. This Mummy is reckon'd a good Reſolvent of coagulated Blood after Falls or Blows, and a good Antiſeptick; acting not only by its Bituminous and Balſamick Parts, but alſo by the volatile Salts of the Carcaſs from which it is made. By diſſolving it in Spirit of Wine, we eaſily obtain a Tincture which contains its Balſamick Qualities.

41. *Ungula Alcis.* Elks Hoof.

This contains a volatile Salt, like that of the other Parts of Animals, and in this reſpect may be uſeful in the Epilepſy, but not on account of the Fable related by Authors, that the Elk is a *Ruſſian* Animal, very ſubject to Convulſions, and cures it ſelf by ſcratching its Ear with its left Foot; the Hoof of which Foot was upon that account preferred to the right, and recommended to be taken inwardly in Powder, or worn about the Neck in Epilepſies.

42. *Sperma Ceti Offic.*

The Nature and Origin of this Subſtance has been long diſputed; but we are now ſatisfied that it is a fatty Animal Subſtance, found in the Brain and circumjacent Parts, eſpecially in the Diploe of the Cranium, of a Whale named *Orca* or *Ryaris.* It likewiſe ſometimes ſwims on the Surface of the Sea, near the Shores on which theſe Whales have ſtruck, and where their Carcaſſes have putrified. According to the *Engliſh* Accounts, *Sperma Ceti* is prepared by boiling the Brains of the Whales in a ſtrong Lixivium, till all the Humidity being evaporated, a white ſolid Matter, like Soap, remains. This being cooled, they take off the Oil which ſettles at Top, and having melted the ſolid Maſs a ſecond time, and ſuffer'd it to cool, they divide it with

with Knives into *Laminæ*, in which Form it is imported. It is likewiſe made at *St. John de Luz*, at *Amſterdam*, and elſewhere. *Sperma Ceti* is an excellent Emollient and Pectoral, eſpecially when melted over the Fire with Oil of ſweet Almonds. The other Ways of uſing it, both inwardly and outwardly, are too commonly known to need being mentioned.

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